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SPECIAL ARTICLE

SOME EXPERIMENTS UPON THE REMOVAL OF OYSTERS FROM POLLUTED TO UNPOLLUTED WATERS.

By EARLE B. PHELPS.
From the Public Health and Research Laboratories, New York.

The activities of the Federal Department of Agriculture and of the various state authorities in connection with the oyster industry and with particular reference to the sale of oysters from polluted sources, has, within the past year, led to the official condemnation of large areas of oyster grounds upon which there exist at present oyster layings of enormous value. This official condemnation takes the form of a refusal to grant licenses for the further use of these condemned grounds for the raising of oysters. The owner of these oysters and the lessee of the grounds in such cases finds himself obliged either to abandon his property wholly or to attempt the removal of the oysters themselves to waters of a purer character, with the expectation that after a sufficient time has elapsed these oysters will have cleansed themselves and become sufficiently freed from evidence of pollution to be once more marketable. It therefore becomes a matter of considerable importance to determine the minimum length of

time required for this self-purification to take place. From a sanitary standpoint, this time must be adequate to insure a thorough and satisfactory removal of all traces of polluted matter. From a commercial and economic standpoint it is desirable for two reasons to make this time as short as possible. In the first place, oyster beds that, owing to their remoteness from sources of pollution, are sufficiently good for the re-laying of these polluted oysters, are difficult to find, and in the case of any particular individual are apt to be extremely limited in area, so that if several re-layings were possible upon the same bed in the course of one season, the productiveness of these purer beds is greatly enhanced. A second and more vital advantage in a short period of cleansing, lies in the habits of the oyster itself. It is a well-known fact among oyster producers that oysters fattened in the fresher waters, which are those most subject to pollution, rapidly lose weight and yield less meats to the bushel after having been so transplanted. This process of deterioration, from a practical oysterman's point of view, takes place throughout the course of several weeks, so that if the process of cleansing can be reduced to a minimum period of storage, the net yield of shucked oysters will be increased thereby.

In order to determine, if possible, the minimum time that must elapse after oysters are removed from sources that are seriously polluted to clean waters, before they are freed from all evidences of pollution and therefore safe for use, certain experiments were undertaken by the writer in co-operation with an oyster producer of Providence. The oysters that were employed for this purpose were from beds in the Providence River which had been condemned by the Rhode Island Shell Fish Commission. One of these beds was located near Bullock's Point and the other off Conimicut Point. Samples of about fifteen bushels from each of these sources were put down just inside the mouth of the Kickemuit River. A third similar sample from Bullock's Point was laid in West Bay to the Southwest of Prudence Island. The locations of these experimental batches were carefully noted, and the work of transplanting and the operation of sampling from time to time were all done under the immediate supervision of the writer or his technical assistant.

In order to make plain the results of this experiment, it will be necessary to outline briefly our methods of testing oysters and of measuring the degree of pollution to which they have been subject. For this purpose ten oysters are removed from the bottom and with a minimum of handling are placed at once in clean containers, iced, and sent to the laboratory. They are there thoroughly cleaned and opened by means of sterilized instruments. The oyster liquor obtained from within the shell is then collected in a sterile bottle and immediately examined bacteriologically.

The presence of sewage or other pollution is indicated by the presence of characteristic sewage organism, *B. coli*, in this liquor. The degree of pollution is indicated by the relative numbers of this organism found in a definite volume. The entire ten oysters are examined in this way, and the average number of *B. coli* per cubic centimeter is determined. This is the procedure recommended by the Committee on Standard Methods of Oyster Testing of the Laboratory Section, A. P. H. A., the method of calculation of the averages being that of the writer.*

To illustrate further the use of this method, it may be stated that oysters showing a factor of contamination of less than five *B. coli* per cubic centimeter are passed unconditionally by the Rhode Island Shell Fish Commission. The Commission also passes conditionally beds upon which the factor of pollution ranges between five and ten, and condemns or refuses to certify beds upon which this pollution factor is shown to be over ten.

The beds from which these oysters were taken were without doubt too seriously polluted to justify their use. An inspection of the Providence River, which is seriously polluted by the sewage of the city of Providence and elsewhere, would, be sufficient, even in the absence of any further information to condemn these beds. The pollution factor upon the Bullock's Point bed was found upon examination to be 22.8, and upon the Conimicut Point beds to be 71.2, indicating in both cases conditions of pollution too serious to justify further use of these beds. The two experimental batches previously mentioned were collected from these sources on October 21st, and laid in the Kickemuit River on the same day. Four days later, October 25th, the first samples were taken from both these batches. The number of *B. coli* found in the batch from Bullock's Point on this day was less than one per cubic centimeter, and in the batch from Conimicut 2.8, showing that in both cases these oysters had been sufficiently cleansed within four days to warrant their being marketed. On October 31st, ten days after their transplanting, these same two batches were again examined and found to contain 0.6 and 0.4 *B. coli* per cubic centimeter, respectively. These results compare favorably with the best that it is possible to obtain in the waters of Narragansett Bay. This was ten days after the transplanting of the oysters. It was obvious from these experiments that surely within four days, and possibly within a shorter period of time, a healthy oyster transplanted from polluted to clean waters will rid itself of the evidences of pollution, and we may justly argue from this that the sewage material which is always associated with *B. coli*, and of which the latter is taken as an index, have also been eliminated.

* Phelps, E. B. A Method of Calculating the Numbers of *B. coli* present in a water from the results of Dilution Tests. American Journal of Public Hygiene. VIII., (1908).

It was of further interest, however, to determine if within this period of four days a satisfactory result could be obtained. For this purpose a third batch of oysters was collected off Bullock's Point, and these, owing to some doubt that had arisen in the meantime as to the purity of the Kickemuit River, were re-layed in the West Bay. This was done on October 29th. On October 31st, a sample of oysters collected from this batch showed an average content of *B. coli* of 0.4 per cubic centimeter. On November 2nd, two weeks after the laying of the first two batches in the Kickemuit, they were again examined and showed an average *B. Coli* of 1 and of 0.4, respectively. They had evidently reached the limit of purity possible in these waters. Further examination of the West Bay batch was not made by reason of the fact that such very rapid improvement was shown within two days, that there could be no reasonable doubt as to the efficacy of very short periods of storage in clean water.

Further experiments are now under way with larger batches, tending to show the effect upon the marketable qualities of the oysters as regards the net yield of meats, but the importance of these experimental observations seems sufficiently great to justify their early publication in order that attention may be directed to this desirable mode of procedure in case of the condemnation of valuable oyster layings.

American Public Health Association

THE PREVENTION OF BLINDNESS.

By SAMUEL E. ELIOT,
Secretary, Russell Sage Foundation Committee on the Prevention of Blindness.

In any complete scheme of public health, the conservation of eyesight has a place. For, if general physical health comes first on the list of factors making for happiness, and mental health comes second, eyesight should perhaps be accorded third place.

Consider for a moment the value of human eyesight, and first its value to the individual who enjoys it. It can scarcely be calculated in quantitative terms—in dollars and cents—though economists will list for you the compensations due for loss of eyesight in various grades of employment. Nor can the value of eyesight be altogether appreciated in qualitative terms of a positive character, such as that "sight is the most important special sense" a thing we know so well that it means absolutely nothing to us. About the only way, in fact, to realize the value of sight is to really try to imagine yourself to be blind. Sight is like many other things in life—you realize their value only when you no longer have them.

We have heard most able and informing papers on the facts of mental defects and diseases, and the methods of their amelioration and cure. It is most fitting that the theme "Prevention of Blindness" should be ranged alongside of these themes, for is not blindness a most distinct and radical form of mental abnormality? Is it a normal brain in which a whole network of brain cells and tracts bearing the accumulated impressions and associations of years, are permanently cut off from fresh stimuli and the possibility of fresh associational development thus entirely lost?

There are those who maintain that the average blind person is normal, but it is glossing matters to say this. Those who say that a blind person is normal are those for whom the vague and childish term "crazy" is synonymous with abnormal. Of course a blind person is not by reason of his blindness insane; but he is abnormal, irretrievably and distressingly abnormal, despite every mitigation or alleviation that all the cleverness and kindness of his seeing helpers may contrive and administer. Thus it is in terms of loss that we can best grasp the positive value of sight to the individual.

* Read at 38th Annual Meeting of American Public Health Association, Milwaukee, Sept. 1910.

And the value of eyesight to society is likewise realized only in terms of loss when an actual case of blindness occurs. It means little or nothing to say that 99 out of a hundred callings or trades are absolutely dependent upon the good eyesight of their employees, but it does mean something to say that 99 out of 100 men, if blinded in mid-life are no longer of any use in their original callings. If a man is blinded, it simply means, in the vast majority of cases, that that man loses his job and has to work out a totally new relation to his community. As a general rule, the value of that man after his misfortune is only a bare fraction of what it was formerly; and although valiant efforts are made by many workers for the blind, to break up the line of economic distinction between the blind and the sighted, by striving to make the blind industrially or professionally self-supporting—nevertheless there always remains, and doubtless will remain a large number who are rendered permanently dependent to a greater or less degree, if blinded in mid-life. Indeed, even those who do become entirely self-supporting usually do so after passing through a longer or shorter period of dependence, during which they have received their instruction for independent living; so that at the very best, independence of the blind is a qualified thing.

The Germans in an experience of almost a century in the education and training of the blind, have come to the conclusion that the blind are a partially dependent class.

Thus far, we have considered that class of blind who become blind in mid-life. The individual and social significance of sight may, for those imaginatively inclined, be conceived even more vividly by a consideration of the case of those born blind. The person blinded from birth has cost as a child so much more to educate than a seeing child, and is inherently so handicapped by the absolute absence of any development in the cortical centers of sight — a matter of primary importance in the development of the whole man—that it is decidedly the exception if a rounded and well-poised personality, or an economically independent adult can result.

Thus again we see that the social value of eyesight is also best realized by a consideration of what we have lost after we have lost it.

However, the great value of eyesight from either standpoint, constitutes no special reason for the inauguration of a social movement for the prevention of blindness. The same line of argument also justifies the efforts of oculists and ophthalmologists, who, on the whole, adequately occupy the central field of relief and cure of eye distress. Some further argument is needed to justify a social movement, and that argument is provided by an analysis and study of the several outstanding causes of blindness and eye disablement. For the fact is thus adduced that several of these causes are

amenable to social control. That is, they can be approached from the side of sociological investigation and can be measurably dealt with by the education of the public and by the passage of social legislation. These are the facts that warrant the prevention of blindness movement, and give it a footing alongside the activities of the medical profession. It is thus required of the lay worker in this movement that he, as well as the oculist, appreciate the vast value of eyesight.

Near the head of the list of causes of blindness and eye disablement, stands "Babies' sore eyes; or Ophthalmia Neonatorum." In 1882, Crede, of Leipsic, discovered that a 2% solution of nitrate of silver* dropped into the eye of the infant soon after birth effectually destroyed all possibility of infection due to the gonococcus or other germ, with no harm to the eye of the child. One would suppose that the discovery of this prophylactic would have been followed by an instant and hearty adoption of its use by all gynecologists and family physicians. But in this country the fact that the practice of the midwife is so scantily regulated, operates strongly against this prophylaxis attaining the degree of usefulness which is its due. Investigations have shown that large sections of the medical profession itself are obdurately ignorant and apathetic about the use of the prophylactic. It can thus be clearly seen that ophthalmia neonatorum is a cause of blindness which is thoroughly amenable to social control. That it would pay to make an effort to obtain this control became unquestioned when it was found by investigation that anywhere from 25% to 35% of the cases of blindness received at ten schools for the blind in this country were due to ophthalmia neonatorum. Of course the majority of blindness occurs after school age. Consequently perhaps 10 per cent. of all blindness, or between 7,000 and 10,000 cases in this country are due to the neglect to have the prophylactic applied to the children's eyes at birth in time to save them.

The number of cases of unilateral blindness is vastly greater and represents a great handicap on the part of the sufferer. The total number of those suffering from one form or another of acute eye distress or disablement of vision, other than that of unilateral blindness, has never been fully studied, and until methods of recording are improved, probably never will be. The clinics of eye and ear hospitals and the practice of private physicians, indicate that the number is vastly large.

We thus see how there was thrust upon the shoulders of far-sighted physicians and responsible laity, the following obvious and specific pieces of business, namely: first, to investigate the extent to which the prophylactic is used, as well as to study other causes of blindness; second, to tell the

*Most physicians now employ 1% solution nitrate of silver.

general public about the dangers of gonococcic infection, as well as innocent infections at birth; and further to tell people to demand of their physician, or whoever else attends the birth, either the use of the prophylactic or specific reasons why it is not used in specific cases; third, to get legislation passed which would conduce to the wider and more intelligent use of the prophylactic.

In New York in 1908 a co-operative committee of physicians and social workers was organized for precisely the foregoing purposes. That committee is known as the Committee for the Prevention of Blindness, of the New York Association for the Blind. Dr. F. Park Lewis, of Buffalo, has from the beginning been very active in furthering the purpose of this organization; and Miss Louisa Lee Schuyler, of New York City, the present Chairman of the Committee, has given much time and attention to the movement. Miss Carolyn Van Blarcom, a graduate nurse of Lotus Hospital, is the present secretary.

This New York committee has achieved much along the lines of education, publicity, and legislation. It has published and circulates widely six bulletins relating to the prevention of blindness. It has a number of photographic and lantern slide exhibits which have been used widely not only in New York State, but far beyond its confines. A lecture tour throughout some of the towns of the state, and addresses before Women's Clubs and talks to Mothers' Clubs at settlements, articles in general and special magazines, have been other avenues of usefulness which have been employed. With the aid of State Commissioner Porter, some excellent pieces of legislation have been obtained, among which may be noted a law providing for the free distribution of the prophylactic through the Health Boards, for which the State pays $3,000.

Those who are interested in the details of the growth of the movement in other states, I would refer to the bulletin published by the Committee on the Prevention of Blindness of the Russell Sage Foundation. This bulletin is reviewed in the last August issue of the Survey, and in a foot note to that review, appears my name and address. I shall be only too glad to send this bulletin to anyone desiring it. It gives a brief and clear outline of the work from the very beginning up to the middle of May of this year.

At that time, the Committee of the Russell Sage Foundation appointed me as a National Secretary to further the work of prevention of blindness in other states, and I have accordingly aided in the organization of three State Associations for the Prevention of Blindness which are already launching on careers of useful activity. In Kentucky, Missouri, and Arkansas, where these organizations have been formed, the New

York plan has been generally followed; namely, close co-operation of medical men and laity in a program of investigation, education, and legislation.

Practically all of the work which I have outlined or referred to above, has been concerned with one outstanding cause of blindness,—namely, Babies' Sore Eyes. This limitation of the objects of the work has been a conscious and intentional one. It has been felt that it would be best, in the long run, to demonstrate that prevention of blindness, as a social movement, is a good thing, by doing one thing well. But there are other causes of blindness amenable to social control, perhaps of equal, possibly of greater importance than ophthalmia neonatorum. I shall mention here only two of these—namely, trachoma and industrial accidents. Recent developments tend to indicate that the time may be ripe for the prevention of blindness movement to extend its efforts to these two causes of blindness.

Take trachoma. When we began to organize in Kentucky, we found that the mountains in the eastern part of the state were full of it. One of the best oculists in Lexington, who has held a clinic for three days in one of those poor mountain counties, reported that he saw over 70 cases of trachoma during that time, and the reports of laymen tend to corroborate this testimony. As a result of our activity, Dr. MacCormack and his health board have granted to the Prevention of Blindness Association an appropriation to pay for the investigation of trachoma in Clay County, Kentucky. Dr. Ray, one of Louisville's finest oculists, has trained the young physicians for the special purpose of making this survey; they will be able to make as good a differential diagnosis for trachoma as can be made anywhere.

In Arkansas it seems that over 50% of the students in the School for the Blind are victims of trachoma. Most of these come from the northwestern part of that state.

In southern Missouri a similar condition probably obtains. In southern Illinois there is a nest of trachoma. In regions of Ohio, inhabited by Slavs and Poles, there are quantities of cases of trachoma. In Texas and California and the other states that impinge upon Mexico, there are reports of trachoma. And since returning to New York, I have come into communication with Dr. Franklin of Pennsylvania, who has for years been interested in devising means for the control of trachoma in that state. He is exceedingly alive as to the prevalence of trachoma in this country.

An average of more than two-thirds of the immigrants rejected from this country, are rejected because they have trachoma. It is pertinent to ask—why do we examine every prospective inhabitant of this

country for trachoma, and allow to go unexamined and uncontrolled, hotbeds, literally hotbeds of trachoma, in numerous and various quarters of the Union itself. Until attention is given to sources of infection within the country, the examination of every person entering this country is practically a farce. The effects of trachoma are not so swiftly or so surely suffered as are the effects of gonococcic poisoning. The cure is a more tedious and more costly process than is the dramatic and almost instantaneous cure of ophthalmia neonatorum with two cents worth of prophylactic. Babies appeal more directly to sympathy than do children or adults; but do any of these considerations deliver the public for a moment from responsibility for the suppression of trachoma?

Again take industrial accidents to the eyes—a very large percentage of blindness could be prevented by the passage of laws requiring the installation of safety appliances and the wearing of glasses by operatives in trades dangerous to the eyesight. For instance, in visiting the breweries yesterday, it was noticeable that the girls and boys who handled the bottles as they came from the sterilizing process, in some cases, wore glasses for protection. I asked the foreman about this. He told me that the pressure in these bottles is anywhere from 10 to 25 pounds; that the glasses sometimes have flaws; that the handling of them jars them; and that as a result bottles explode daily, sending bits of glass everywhere about. Sometime ago, two cases of blindness resulted inside of one month. Consequently those glasses have been provided by the employers; but do the girls wear them?—that is another story. They think that the glasses interfere with their good looks! This foreman has recently had to discharge twelve girls for not wearing the glasses. Young people are careless and willing to take risks—but how about the state caring for the education of the blinded persons? How about the forty other breweries in the state where no uniform procedure in this matter is observed, and how about the soda bottling factories where the pressure in the bottles is from 40 to 50 pounds? It certainly looks as though the law should do its proverbial stepping in, and should require the wearing of glasses in cases like these. I have little doubt that this condition is representative of many other industries.

There is another evidence that at least trachoma and industrial accidents to the eyes may come within the province of our social movement; for we have always followed the suggestions of the medical profession, even if we have to tell the medical profession to suggest things to us. At the meeting of the American Medical Association the Committee on Ophthalmia Neonatorum, of which I shall speak at greater length presently, was expanded into the Committee on the Prevention of

Blindness, with committeemen appointed to take charge, among other causes of blindness, of trachoma and industrial accidents. Thus not only the nature of these causes of blindness, but the action of the medical profession also, give promise that the prevention of blindness movement will definitely expand its sphere of usefulness.

The general topic for dicussion, I have not yet touched upon. I now wish to speak briefly regarding the inter-relation that exists between the Prevention of Blindness on the one hand, and two of the National Associations working in the interest of health, on the other—namely, the American Medical Association, and the National Movement for Sex Hygiene.

Our relations with the American Medical Association have been clearly defined from the very beginning of our movement. The Committee on Ophthalmia Neonatorum of the American Medical Association is, indeed, father to the national work now undertaken by the Russell Sage Foundation. For the past five years the Committee on Ophthalmia Neonatorum of the Medical Association, under the able leadership of Dr. F. Park Lewis, has been doing a great work, not only in educating and quickening the medical profession as to the importance of the issue, which ophthalmia neonatorum presents, but also, through its state committees in every state in the Union, doing much to arouse the general public, and to instigate legislation.

Considerable investigation and statistical work has also been done by means of these committees throughout the country. The program of the Committee on Ophthalmia Neonatorum is indeed a model one, and much of it has been successfully carried out; but the machine-like character of the organization, its wide distribution, the difficulty of its getting together, have necessarily caused the results of its work to be uneven in amount and quality. In short, Dr. Lewis' experiment of the efficient help which social workers gave to the movement in both New York and Massachusetts, as well as in other states, led him to advocate the joining of the medical profession and social workers in a broad national movement.

In any state where we organize, the State Committee on Ophthalmia Neonatorum, consisting of a gynecologist, a sanitarian, and an ophthalmologist furnishes the nucleus of the local movement.

In short, everywhere and always, we take our orders from the medical profession; without its approval, we do not move.

Finally, a word as to our relations with the sex hygiene movement. So far as the prevention of blindness deals with infection by the gonococcus, it overlaps the work of the sex hygiene movement. It would perhaps be truer to say that it attacks the same problem at a slightly different level

and from a slightly different angle, than to say merely that it overlaps it; for, from the point of view of causes, so far as the prevention of blindness movement deals with infection of the eyes by the gonococcus, prevention of blindness is a misnomer. It should rather be called cure of one of the more immediate and distressing effects of gonococcic poisoning. But in addition to a program of practical curative work, which this part of the prevention of blindness movement really undertakes, it can and does add its voice to the campaign of education in fundamental moral prevention of social diseases, which is the distinctive mission of the sex hygiene movement.

Though the educational appeal made by the prevention of blindness movement must enter the public mind and conscience through a comparatively humble wicket gate, perhaps almost as much knowledge and stirring of conscience may enter in this way as through the main gateway, which is so heavily guarded by the prejudices and traditions of centuries.

So far, then, as our relations with societies of sex hygiene go, it is apparent that our work is different from theirs, inasmuch as it emphasizes relief of symptoms, rather than eradication of fundamental causes. But it is the same as theirs in so far as both indirectly and directly its campaign offers a glorious opportunity to arouse the public and educate it mentally and morally on one of the most important issues facing it in this or any age, namely, sex hygiene.

THE AMERICAN CIVIC ASSOCIATION AND ITS RELATION TO PUBLIC HEALTH.

By RICHARD B. WATROUS, Secretary.

The objects of the American Civic Association are stated to be: "The cultivation of higher ideals of civic life and beauty in America, the promotion of city, town, and neighborhood improvement, the preservation and development of landscape, and the advancement of outdoor art."

Under that brief statement, the Association for the past seven years has been seriously engaged in a variety of activities, which may be briefly stated as follows:

It has aimed to make living conditions clean, healthful, attractive; to extend the making of public parks; to promote the opening of gardens and playgrounds for children and recreation centers for adults; to abate public nuisances—including billboards, objectionable signs, needless noises, unnecessary poles and wires, unpleasant and wasteful smoking factory chimneys; to make the buildings and the surroundings of railway stations, schools, and factories attractive; to protect existing trees and to encourage intelligent tree planting; to preserve great scenic wonders (such as Niagara Falls, the White Mountains and the Hetch-Hetchy Valley) from commercial spoliation.

During the present year the American Civic Association has been very active in conducting a national crusade for the extermination of the house fly. It is largely due, I presume, to that crusade, that we are asked to be represented at this symposium for the consideration of the relation our several societies may bear to the general subject of safeguarding the public health.

Referring to our original statement of purposes, it may seem a departure from those purposes to be so actively identified in the campaign to "swat" the dangerous little typhoid fly. One, at first thought, does not associate the making of parks and boulevards with the killing of flies; but a second consideration will make it very clear that we are acting entirely within our province in this new crusade, for if it involves any one effort more than another, it is the thorough cleaning up of properties in the vicinity of the home, the school, the factory, and the store, in both the largely populated centers and in the rural districts.

* Read at 38th Annual Meeting of American Public Health Association, Milwaukee, September, 1910.

For years we have been urging the beautifying of the back-yards and front-yards for the sake of BEAUTY alone. The fight against the fly gives us a more serious argument for urging such effort. As a result of research by scientific bodies and organizations such as the American Public Health Association, it has been demonstrated beyond successful refutation that the fly is a menace to public health; that what is known as the *musca domestica* is really the very dangerous TYPHOID FLY, and in our propaganda he is being so designated.

There can be no doubt that his pernicious activities, which begin with his birth in the filth of a manure pile, and continue in his course over decayed animals, decaying fruit and vegetables, and into the homes, to spread the germs of disease on our food, are responsible for the death of hundreds of thousands of men, women, and children annually. There is no more occasion to demonstrate to the average thinking man the importance of exterminating the fly, than to convince him that it is wise to carry life insurance.

Crusades against the house fly are not a development of this year, 1910, for as long as ten years ago advanced thinkers commenced the fight on the fly, and various state and city health boards have been conducting such a fight with more or less vigor for the past few years. At our Convention at Pittsburgh in 1908 the fly was made the subject of a special paper by Mr. Daniel D. Jackson. It remained, however, for the American Civic Association to bring together, this year, these several and separated campaigns into one national crusade, the principal purpose of which should be the education of the masses of the people to the dangers attendant upon the unrestricted liberty of the fly, and to show them ways and means by which its numbers might be very greatly reduced. The crusade is a popular one. Everyone wants to join it, if only to get rid of a nuisance. We are showing the fly in its true and dangerous light.

Widespread publicity secured from our general offices in Washington, and made doubly valuable by the use of magazines, as well as by newspapers, has presented the fly in its hideousness to more people this year than ever before.

Under the direction of the Chairman of our Fly-Fighting Committee, Mr. Edward Hatch, Jr., of New York City, who last year was Chairman of the Fly Committee of the Merchants' Association of New York City, a remarkable series of photographs was taken in England, illustrating in minutest detail the habits of the fly in its breeding, showing it enlarged to the size of a Plymouth Rock hen as it burrows in the manure pile for a nesting place, showing the development of the eggs through the larvae and pupae states into the adult fly.

As a second chapter, some of the offensive habits of the fly are most effectually displayed, as, for instance, his course over the remains of decaying fish and from there to the loaf sugar on our dinner table, again back to a cuspidor licking up the slime on its edges, with a quick flight thence to the nipple of a baby's nursing bottle, which in the next picture very naturally finds its way into the mouth of the nursing baby.

Those films have been sent out through the five and ten cent theatres of America, reaching just the people most desired to be reached and without doubt sending them to their homes determined at least to get rid of the flies that may be found in their own homes, and in many cases to become ardent and enthusiastic co-workers in the general campaign for the complete extermination of the fly. Reports received from many film distributors show that the fly pictures have been very popular. In many cities they have been presented under the auspices of the local civic associations.

As a natural feature of our crusade we have issued bulletins pointing out the dangers of the fly and suggesting methods for its extermination. We have devoted practically all of our efforts toward impressing upon people the importance of doing away with the breeding places of the fly. So far as possible we have avoided any extended suggestions as to the elimination of the fly when once it gets into the house, except as we have urged that houses should be screened to prevent its entrance, and have suggested some preparations or mixtures which might be safely applied for its killing; of course, carefully avoiding the recommendation of any proprietary articles. I believe the strong right arm with a newspaper to "swat" the fly is the best method, unless they are too many in number.

Formaldehyde has been recommended by no less an authority than the London Lancet. This summer, however, has brought several reports that it is ineffective. For a wholesale slaughter of flies inside the house, Dr. L. O. Howard, Chief of the Bureau of Entomology, believes that Pyrethrum, prepared in small cones and burnt, is about the most effective agency. But these are details concerning which most of this audience are far better informed than I, or possibly other members of the Fly-Fighting Committee of the American Civic Association.

Let me allude briefly to other activities which bring us into close harmony with the general movement for the safeguarding of health. A few years ago, for very much the same reason that we assumed our responsibility in connection with the fly, we aided a persistent educational campaign for the extinction of the mosquito, and issued at that time valuable pamphlets which have been recognized as authorities by individuals and communities.

Those conversant with the mosquito subject know that wonders have been accomplished, notably on Long Island, in Florida, and in Cuba. It has been conclusively demonstrated that the mosquito can be eliminated; we believe the same results may be accomplished with the fly.

Another campaign which has to do with the conservation of human life has been our active participation in the movement for a safe and sane Fourth of July. Always bearing in mind the importance of continuing as a great American institution, an enthusiastic, happy observance of the birthday of the Nation, we urged that the use of explosives and fireworks be absolutely prohibited in large cities. We have urged upon common councils and other legislative bodies the importance of passing stringent ordinances on the subject. The results of a continuous demand for a safe and sane Fourth of July are beginning to be apparent in the decreased number of accidents and fatalities incident to the use of explosives. In our work for a safe and sane Fourth of July we have urged that civic bodies take upon themselves the preparation of programs of a different character which will give pleasure to the grown-ups as well as to the children.

We urge the abatement of two other nuisances, and in connection with each of them we are, again, working for healthy living conditions. In our arguments against the billboard we claim that it is not only a menace to civic art and good morals, but to good health. It does not require any extended arguments to make it clear that the billboard offers opportunities for the spread of disease because of the refuse that is permitted to accumulate behind it and the refuse that is a feature of the paste and waste paper torn from the billboard.

It is almost needless, also, to touch upon the importance to the public health of a wise solution of the smoke problem. It is a problem that has engaged the serious thought and consideration of medical societies for several years past. We regard the smoke problem as an economic one from the standpoint of the manufacturer and endeavor to impress upon him the fact that by permitting the emission of vast volumes of smoke from his factory chimneys he is practically burning up money; from the standpoint of public health he is contributing to conditions which are not favorable for the good health and happiness of the communities which permit large quantities of black smoke to issue from their industrial plants.

In closing, let me say that the American Civic Association welcomes any movement which proposes to bring into harmonious action these several movements for the public health. We believe that we have opened up avenues for efficient service which are very properly being

conducted by the American Civic Association and shall continue with all the vigor we have to put forth our best efforts for the achievement of these several reforms. We are glad to co-operate with other organizations in their efforts and to have them co-operate with us in ours.

Briefly summarized, we believe that the American Civic Association, the American Public Health Association, and other similar organizations stand for what is the best and most worthy of enthusiastic support in conservation—a conservation which need not involve any one class of men against another in dispute—the conservation of human life.

CHILD LABOR AND PUBLIC HEALTH.*

By EDWARD N. CLOPPER,
Ohio Valley Secretary, National Child Labor Committee.

The protection of children from premature or otherwise improper employment and the consequent promotion and safeguarding of the welfare of society, necessitate, first, a comprehensive and carefully drawn child labor law, and second, complete and impartial enforcement. Social workers are advocating the adoption by the states of the standard child labor law which is composed of the best provisions of the various statutes now in force in those states having the most advanced legislation on this subject. So we have a goal toward which to work in the first essential movement for child labor reform—a standard law, the provisions of which have already been proved necessary by the experience of several states. The second essential movement—the securing of the law's enforcement—is by far the more important and the more difficult step toward child labor reform.

The standard child labor law may be a thing of beauty as it reposes tranquilly on the pages of an admiring commonwealth's statute books, but it can never become a joy forever until it is completely and impartially enforced. The preservation of the health, and therefore the future efficiency, of working children depend in large measure upon strict enforcement. Referring to the physical effects of the abuse of children by premature labor in Italy, Mosso says: "The ruin which the exhaustion of fatigue brings about in man, appears clearly in the degeneration of our race in some parts of Italy. In the province of Caltanissetta, for example, in the four years from 1881 to 1884, out of 3,672 sulphur workers, youths of twenty years of age, who presented themselves for examination, only 203 were declared fit for military service." I quote this statement to show the fearful ravages entailed by a neglected form of child labor and to urge the necessity of better administration of the laws that we have now in this country relative to the employment of children. In the United States at the present day bad conditions still exist. The results of the investigation made by the Department of Commerce and Labor into the conditions surrounding working women and children have not yet been made public in their entirety, although it has been nearly four years since Congress authorized the study, but we learn that in the textile industry 5.2% of the employees in northern cotton mills are children under 16 years, while 20% in the

* Read at 38th Annual Meeting of American Public Health Association, Milwaukee, Sept., 1910.

southern mills are children. The difference between the findings in the mills and in the homes concerning the ILLEGAL employment of children is worthy of special note: the study of age groups in the mills reveals .4% of the northern children working UNDER the legal age, while the homes reveal 4% or 10 times as many; in the South the mills show 1.64% and the homes the enormous proportion of 24.6% working under 12 years—of whom 8.2% are under 9 years. In the southern mills 52.4% of the children under 14 years can neither read nor write, as against 12.2% of those working illegally under this age in the North. Among children of 14 and 15 years, about 7% in the North are illiterate, in the South 35.5%. In two states mills were found regularly exceeding the legal limit of work hours. Eleven mills were found in various states "stealing time" by beginning before the hour scheduled in the morning and at noon. Seven mills REQUIRE overtime work, three of these from children as well as women. In North and South Carolina 32 mills employ 549 children from 11½ to 12 hours a NIGHT for five nights in the week. What will be the ruin wrought upon these children by "the exhaustion of fatigue?"

When we think of the conditions under which these children work, and the effect upon their health, it is disappointing to read the mild opinion of the Board of Health of a great textile manufacturing state, concerning bad conditions in cotton mills: "A weave-room with poor light, unnecessarily high temperature, some dust and an excess of moisture is not, from a sanitary point of view, a desirable room to work in. Neither is a spinning-room with considerable dust flying about, together with excessive heat and undue moisture." This is too much like saying that water is damp. It would be more in line with the real policy for safeguarding the health of employees, if in addition to insisting upon the improvement of such conditions, the board also declared that children under 16 years should not be employed at night nor more than 8 hours a day.

The principle that it is harmful both to the child and to society for children under the age of 16 years to be employed at any dangerous work, or at gainful occupation at night, or more than 8 hours a day, has been accepted in its entirety in this country by only five states and the District of Columbia. These six governments provide a total of 66 factory inspectors to enforce their child labor laws, and of this number, 53 are within the two states of Ohio and Illinois. Upon the efficiency of these officers very largely depends the well-being of the working children of these states. It is therefore cruel and short-sighted on the part of any state government not to provide an adequate force of inspectors who devote their time solely to inspection and prosecution.

Take for example the state of West Virginia, which ranks 36th in the Union with respect to child labor restriction; this state employs one lone man, the Commissioner of Labor, to enforce its laws on child labor, woman labor, sanitary condition of work-rooms and safety appliances, and also requires him to gather and compile the labor statistics and to conduct a free employment bureau. Is it surprising then that right in the city of Wheeling where this American "Pooh-Bah" has his office, the secretary of the Associated Charities found a 10-year-old boy who was working overtime in a glass factory? At the boy's home the mother said, "George is upstairs asleep, and he wanted me to call him, but I just made up my mind that he needs rest. Everybody thinks he is sick because he is thin and pale, but he isn't—he has just been working too hard!"

At intervals we have rudely thrust upon us the conviction that our officials in every state are not sufficient in number or are not careful in their administration of the child labor law; as when we read in the newspapers that a 12-year-old boy has, by his next friend, sued a company for damages because of the loss of an arm in their planing mill, or when we learn that a 13-year-old girl has been taken home from a paper-box factory in a fainting condition because of overwork.

Eternal vigilance is the price of protection for childhood everywhere—even in the states having the most advanced legislation, as in Ohio, where in a Cincinnati candy factory, the inspector, after having been told by the manager that no girls were employed, explored the establishment and found 21 girls working in the cellar where there was no ventilation and light from only two small windows.

The working children of West Virginia suffer further because of their one inspector's blind, illogical, and illegal policy of permitting certain children under the legal age to continue at work, on the ground that they are orphans and their mothers need their earnings. In a recent interview this official calmly stated that the law made an exception of them, which it does not. He declared further that there were only seven children under 14 years employed in the entire state. He probably had in mind a photograph of seven glass factory boys, all under 14 years and none of them orphans, which the Secretary of the State Child Labor Committee recently took in the hope that it might help to get some degree of enforcement of the law in the town where she lives.

The specter of the orphan and the widowed mother still looms large wherever child labor regulation is advocated. This is the attitude of almost all our opponents, and it is peculiarly unfortunate when it is assumed by the very person who is charged with enforcing the law. Both the legal and the illegal exemption of orphans from the protection of the law is

especially to be deplored. It places on children already handicapped, the additional burden of wage-earning at an age when, according to the very statute that grants the exemption or the official who tolerates it, children in more fortunate circumstances need protection. It is a false philanthropy and amounts to a denial of the birthright of childhood—protection, education, training, and play.

This mark of sympathy for the orphans by taking them into factories at an early age, reminds one of Lanigan's fable about the "Kind-Hearted She-Elephant": "An elephant while stamping through the Jungle one day quite unintentionally stepped upon a Mother Bird, crushing it to death. Hearing the cries of the Little Brood in the bushes near by she sought out the nest, and with a sympathetic sigh said: 'Poor little things! I've been a mother myself, I'll keep you warm,' and proceeded to sit upon the nest!"

The absence of adequate requirements for the proof of age of children about to go to work, is another misfortune in those states where either no proof at all is demanded or merely the parent's affidavit is accepted. In Indiana, if a relative swears that a child is 14 years of age or over, the child may legally enter any gainful occupation. This system places a premium upon perjury and often results in great injustice to the child. The employer is protected from prosecution by the parent's affidavit, but the child is exposed to exploitation by unscrupulous relatives. The following instance will serve to illustrate the possibilities for abuse that lurk in this well-meaning but impotent statute: John attended a public school in Cincinnati where he was examined by a medical inspector and found to be suffering with defective vision caused by syphilis, the prognosis being that he would be practically blind. The boy was taken out of the regular school and placed in the special school for blind children. Subsequently he went to Indiana to live with relatives, and last spring the principal of this special school told me that she understood he was employed in a brick-yard there, that she knew his eyesight was bad and was sure he could not be 14 years of age. I reported the case at once to the chief factory inspector of Indiana, who went to the town and found that the boy had been employed in the brick-yard, that he had an affidavit showing him to be 14 years of age, and that he had already quit work and left the town. In advising me of his findings, the inspector protested against "such misrepresentation" and declared that the trip had been "a wild-goose chase." I then started an inquiry to ascertain the exact date of this boy's birth and found that he was actually under 14 years, and therefore the affidavit with which he obtained employment was false.

This case not only illustrates the inadequate protection afforded by an unreliable method for the proof of age but also shows the need of medical examination of all applicants for the employment certificate, so as to prevent the further injury and waste consequent upon the exploitation and neglect of the unfit child.

Even after medical inspection of school children, many parents continue unmindful of the advice and warnings given concerning physical ailments or defects, and as soon as the age limit for compulsory attendance at school is reached, send their offspring to work. Out of the 3,285 children under 16 years of age in Cincinnati, who went to work last year for the first time in their lives, 70% were 14 years old—in other words, most of them had just passed the period during which attendance at school is required. If only proof of age and educational qualifications are demanded, it is inevitable that among the recruits annually supplied to the ranks of child workers there are many who are physically unfit for work.

The powers of the local boards of health should be enlarged, by making it a provision essential to every good child labor law that every child under 16 years who applies for an employment certificate must be examined by a physician of the board of health, and shall not receive the certificate unless he is found to be physically fit to go to work. Only one state in the Union—Massachusetts—makes such a requirement, and there the provision is brand new. On August 1, an act took effect in that state requiring the physicians appointed to inspect the children of the public schools to examine all pupils who are about to leave school to go to work, certifying in writing whether or not each child is in sufficiently sound health to enter upon employment for wages. Officers, before issuing an employment certificate to a child, must receive a satisfactory report of its physical condition from a physician. Hence only in Massachusetts can we be sure that a child suffering with tuberculosis, spinal curvature, or any abnormal condition, will not be permitted to become a breadwinner and expose both itself and society to the dangers of further physical deterioration and increased industrial inefficiency. And even in Massachusetts we can feel sure of this protection only when this law is enforced.

The standard child labor law which we are still struggling to have enacted by the legislatures of many states contains merely the first approach to such a requirement—namely, a permissive clause to the effect that the officer issuing the employment certificate MAY require a physician's certificate if IN HIS OPINION the child has not reached the normal development of a child of its age, and is not in sound health or is physically unable to perform the work which it intends to do. When it is considered that in communities where employment certificates are required, the issuing

officer is almost invariably a layman, unable to determine whether or not a child is physically below normal, and that the issuance of the certificates is simply an extra duty added to his other work and almost universally performed in a careless manner, we begin to appreciate the lack of adequate protection for the children who go to work in the few states that have passed the standard law, not to mention the many states that lag behind in the matter of restrictive legislation.

Another essential element in the proper administration of child labor laws is the granting to the State Board of Health the power to determine whether or not any particular trade or manufacturing process is sufficiently injurious to children to justify their exclusion from it. Such a law is now in effect in Massachusetts, where the State Board of Health has this power with respect to the work of minors under 18 years of age; after the Board has notified a manufacturer that his industry has been included among those deemed injurious to children under 18 he is subject to a fine of $200 if he persists in employing them. The extension of this power to state boards should be granted by every state in the Union.

The application of the advanced age limit to certain lines of work has just been found necessary for the protection of boys from the evil influences and bad physical effects that result from their employment in messenger service at night. New York bars boys under 21 years from engaging in this work, and Ohio fixes the limit at 18 years. These are both recent enactments. We have found that the night messenger service consists almost altogether of running errands in connection with the three great evils of gambling, drink, and prostitution, and that the boys engaged in it are not merely given the opportunity to become acquainted with the worst aspects of city life after dark, but by the very nature of their work are actually thrust into the vilest associations and forced into familiarity with the most degrading vices. Most of the night messengers are on familiar terms with the denizens of the local underworld and suffer with acquired venereal disease. If this work is to be done at all, place the age limit at 21 years, as in New York, and let it be done by men.

There is a very close connection between the problems of public health and child labor. The abolition of improper conditions of child labor in any form will greatly promote public health and well-being, but in order to proceed intelligently toward this desired end we must have full information regarding both the causes and the effects of present day conditions.

Dr. Henry B. Favill says, "If the state is to undertake the establishment of conditions designed to safeguard health, it is imperative that the foundation of accurate knowledge upon which to base radical and compre-

hensive legislation be laid. What we must strive for is knowledge, and to this end, the interested forces demand a National Bureau of Health, the most valuable function of which shall be the culture of intelligence upon defective health—the basis of crime, pauperism, and degeneracy, as well as that widespread inefficiency due to obvious disease."

Similarly we must have an authoritative source for the supply of accurate and UP-TO-DATE information concerning all matters pertaining to the welfare of children, such as infant mortality, the birth rate, physical degeneracy, orphanage, juvenile delinquency, desertion, and illegitimacy, child labor, dangerous occupations, accidents, and diseases of children of the industrial classes, and such other facts as have a bearing upon the health, efficiency, character, and training of children. To secure this source for reliable, prompt, and therefore useful information of this kind, social workers have been urging the establishment at Washington of a federal children's bureau so that the ills of the nation's children shall have the same attention from the government as the boll-weevil in cotton and the cholera in hogs.

THE AMERICAN MEDICAL ASSOCIATION AND ITS RELATION TO PUBLIC HEALTH WORK.

By WM. C. WOODWARD, M. D.,
Washington, D. C.

I shall ask you to regard me for a moment not as Secretary of this Association, but as a member of the Council on Health and Public Instruction of the American Medical Association. No meeting having to do with co-operation along public health lines, no meeting devoted to the conservation and promotion of public health would be complete unless the American Medical Association is represented. The members of the medical profession not only know, but the world itself knows that our profession has been devoting its energies from time immemorial not merely to the cure of disease but to the prevention of suffering, of injury, and of death. The American Medical Association, therefore, as a medical association, stands in the vanguard of preventive medicine. But it seeks no honors; it endeavors to displace no organizations; it stands at all times ready to co-operate with every organization and everybody that is working toward the improvement and conservation of public health. The association needs only to be shown the need and it will do its part. Although I carry no authority from the Association and no word of authority from the Council, but speak on my own responsibility, I think I may say without hesitation, that the Association will gladly take part in any investigation and study that may be decided upon looking towards the determination of a method by which the various organizations and the various public agencies of this country devoted to public health interests can best conserve their energy and accomplish with such resources as they have that which we are seeking, namely, the conservation and protection of the public health and that fulness of life that goes to make up human happiness.

* Read at 38th Annual Meeting of American Public Health Association, Milwaukee, September, 1910.

† In the absence of Dr. C. H. Jones, Baltimore, Secretary of the Section on Preventive Medicine of the American Medical Association, who was to have spoken on this subject, Dr. William C. Woodward, of Washington, D. C., spoke as a member of the Council on Health and Public Instruction of the American Medical Association.

THE NATIONAL HOUSING ASSOCIATION AND ITS RELATION TO PUBLIC HEALTH.*

By LAWRENCE VEILLER,
Secretary, New York.

Before discussing the work of the National Housing Association, I want to pay tribute to the far-sighted vision of your President in inviting to this Convention the representatives of the different organizations who are working along somewhat cognate lines. It is something the American Public Health Association may be proud of in having taken the first step in correlating these different forces. It is indicative of a changed attitude that has come to the medical profession. I am sure all members of this Association are conscious of that change from the past type of practitioner, who used to throw a veil of mystery about the practice of medicine and used terms that the ordinary plain citizen could not understand. That veil has been withdrawn gradually. The old attitude of some practitioners was similar to the attitude of the foreman of a gang of section laborers working in a railroad cut whom I heard of the other day: Approached by a tall "green" Irishman who had climbed out of the ditch where he had been working and had started to take up a wheelbarrow, the foreman said to him, "What are you going to do with that wheelbarrow? Go down into the ditch where you belong; how dare you touch that wheelbarrow? What do you know about machinery?" Have not a good many members of the medical profession assumed that attitude in the past and asked the public what it knows about machinery,—meaning medicine and sanitary science? I, for one, rejoice that the veil of mystery has been lifted.

Dr. Farrand has said that his organization and all the organizations invited to participate in this meeting are helping to popularize sanitary knowledge. That is exactly our function.

The prevention of tuberculosis, the prevention of blindness, the abolition of child labor, the doing away with the fly nuisance,—all of these are important, but the importance of preventing bad housing conditions should not be overlooked.

Seriously, I am surprised to find how rapidly the belief is spreading throughout the United States that the matter of improving living environ-

* Read at 38th Annual Meeting of American Public Health Association, Milwaukee, September, 1910.

ment is fundamental. It is not strange that it should be so. There is not very much use in taking people from a hospital, apparently restored to health, and sending them back to some slum, putting them into a dark room where they never see daylight, or letting them live over an open sewer; we all know that in two or three weeks we shall have them back in the hospital, in as bad a condition physically as they were before. The view that the improvement of home conditions and of all environment is fundamental, is not confined to the medical profession, but is spreading throughout the country.

The National Housing Association is a young organization, a group of public spirited citizens supported by voluntary contributions, seeking to accomplish certain definite reforms. It was organized less than a year ago, but some of its members have been working at housing reform for many years. It is evident that this closely touches not only the work of this Association, but more particularly the work of its individual members—the work of those of our members who are local health officers and members of boards of health.

The housing problem is a social one; it is an architectural one; and it is a moral one; but chiefly, and nearly always, it is a sanitary one. It is a great health problem to be solved along hygienic lines rather than architectural or moral lines. The problem, briefly stated, is to secure in the habitations of all classes of people, especially the poorer members of society, proper light and ventilation, adequate sanitation, and general cleanliness; to do away with nuisances, with alleys, and to solve the great and perplexing problems of the outdoor privy.

It may be of interest to the members of this Association to know how the National Housing Association does its work. We are a national body, not a local one. We go to localities, therefore, upon the invitation of those localities. We never thrust ourselves in. We do not go there to teach them how they ought to do their work, but we go there to advise and counsel with them when they wish it. We seek always to build up a strong local organization, either as a branch of our national organization or affiliated with it; we do not necessarily seek to form a separate and new local body. If we find a group of citizens affiliated with the Chamber of Commerce we seek to make that movement permanent, to develop it. If we find a similar group of people working along lines of charitable or philanthropic activity we work through them. When we visit a locality we always insist on seeing the local conditions at first hand. We are not willing to take other people's impressions of a city's slums. Our own investigations always disclose some conditions that people were not aware of. In a quick way we

make an examination of the slums of the city and get a first-hand impression of what the housing conditions are. We go into cellars and alleys. We look at the plumbing. We go on the roofs.

Now, what happens after we have made a visit of this kind? We nearly always find that the main evils are those I have stated. Often sanitary conditions are neglected. Alleys are piled high with rubbish, filth, and refuse of every kind. Privies are neglected. Cellars are foul and rooms are overcrowded and poorly ventilated. Often we find that the local health department is not aware of these conditions; more frequently, however, we discover that the local health officer is doing everything he can to overcome these evils but is working and has for years been working without a sufficient appropriation to enable him to overcome them. We always assume that to be the attitude of the local health officer, even sometimes when we know it to be the contrary. Thus, sympathetically, we work with the local health department. It always strikes me anew as strange each time I encounter it, that so many good citizens seem instinctively to regard the local health officials and, in fact, all public officials as either incompetent or corrupt. Too frequently it happens that they have never taken the pains to familiarize themselves with the particular problems that the health officers have to face, have never looked into the difficulties he has to encounter—the limitations of the statute, the inadequate force and inadequate funds with which he has to carry on his work. Our chief function is to break down that feeling of antagonism towards the public official. We always assume that the health officer is as anxious to improve the conditions as we are. And we ask the good citizens with whom we are working locally to put themselves in the place of the health officer and stand behind him in his work. To such a body of citizens we say: "Bring to the support of your health officials your authority and standing in the community, make evident through the public press, through meetings, through letters, through personal relations with the finance committee, the council or aldermen, the needs of the health department and the public sentiment there is behind such work." To the local health officer we say: "Take such citizens around and show them the bad conditions in your slums; let them realize that these conditions are allowed to exist because the health department has not sufficient money to pay for inspectors to stop them, and that you cannot stop them unless you have the money." Your local committee thus becomes your strongest aid, and instead of condemning you as in the past, now aids you in getting what you need.

One other word. I should like to ask the members of this Association who are health officers, to consider frankly whether their methods of san-

itary work have kept pace with the changed conditions which have developed in this country in our cities in the last twenty-five years. If they do ask themselves this question they will find, I think, that they are working under the methods of procedure which obtained twenty-five years ago. But these methods will not do today. Twenty-five years ago we had a homogenous American population; today we are dealing with numerous colonies of a foreign-born population, and it won't do for us to sit down and wait for citizens to send to us complaints of sanitary abuses. This is a relic of a pre-glacial sanitary period. Let us substitute for that antiquated method a system of complete, thorough, and frequent sanitary inspection of every tenement house, upon the initiative of our health authorities.

THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

By DR. LIVINGSTON FARRAND,
New York City.

When the National Association took up its work some five years ago, it was recognized that the great immediate problem in the prevention of tuberculosis was one of public education. We were concerned not so much with the cure or with pathological investigation as we were with a broad educational campaign. That campaign had certain distinct ends in view. There was first of all the education of the public with regard to the simple facts of the infectiousness, preventability, and curability of tuberculosis, and the accompanying necessity for a sound personal hygiene. But of equal importance in reaching definite results was the education of public sentiment to a point where it would demand and secure proper legislation and adequate provision for tuberculous cases through hospitals, sanatoria, and dispensaries; this last not so much with a view to the care or cure of the cases themselves as to prevent the extension of the disease through the presence of those cases in the community.

Confronted with such a problem, it was obvious that organization was a first necessity. The campaign opened with practically nothing at hand. Five years ago there were in the United States twenty committees or associations for the prevention of tuberculosis. At first thought, the obvious procedure was to organize a national body with branches in every state and local societies in every community of every state. This sort of rigid organization is an extremely easy matter to bring about on paper, but one of the hardest things in the world to accomplish efficiently; and in a country as wide as ours, and presenting as sharply differentiated problems as ours, it is often one of the most inefficient methods of procedure. One cannot handle a campaign in Texas following the exact lines that may be applicable to Maine. Recognizing the universal applicability of certain truths, it must also be recognized that the plan of one state can seldom be applied in any detail to another. It was therefore decided at the outset of the national campaign against tuberculosis, that a rigid machinery should not be established, but that elasticity should always be provided for; and I think our experience has shown that that attitude was

* Read at 38th Annual Meeting of American Public Health Association, Milwaukee, September, 1910.

wise. While we have organized state associations wherever possible, we have always laid particular stress upon the local organization. In certain states it would appear that after the local organizations have been provided for, the state association has practically fulfilled its purpose. This, again, cannot be laid down as a universal rule, for in certain of our commonwealths it appears that the campaign can still best be operated on a state basis.

The results of the five years' work are that instead of twenty committees there are now four hundred and thirty-five distinct associations devoted to the prevention of tuberculosis in the United States. Practically every section of the country is provided for; practically every city of any size has its association charged with the responsibility for the local problem. With the speed and momentum with which the movement is now progressing, it would seem that in a very short time there will be an organized campaign in practically every community in the United States.

As the work has progressed, attitudes that were at first but tentative have become more fixed and definite. Among the most important of these is the standpoint that the responsibility for the fight against tuberculosis in any community must ultimately be placed squarely upon the shoulders of the local public authorities. It is not a problem that can be handled from a national center. Helpful as the establishment of a National Department, or Bureau of Health, would be, such a foundation could never be more than a useful auxiliary in the fight against tuberculosis, and I infer that the same would hold true of other fields of preventive medicine. It is likewise not a problem to be handled, except in certain instances, upon a state basis. The problem of tuberculosis and its prevention, rooted as it is in living conditions, is a local problem, and its solution will inevitably appear along local lines.

In recognizing the responsibility of the local public authorities we are not overlooking the imperative demand for private and voluntary work. It should never be forgotten, however, that such private activity should be directed toward stimulation and education rather than toward the foundation, direction, and operation of institutions and similar agencies. With regard to this point I think practically a general agreement has now been reached.

One of our greatest problems has been the securing of adequate legislation, either directed specifically against the disease or enabling communities to establish provision upon an adequate scale. In certain of our states the legislation is now abreast of the best expert opinion; in others, much remains to be done, but the outlook is distinctly encouraging. One of the most significant signs of the way in which public authorities are

recognizing their responsibility is the fact that of the expenditures for tuberculosis purposes in the United States in 1909, fifty per cent., as nearly as we can calculate, of the money expended was from public funds. In 1910, according to our best information, nearly seventy-five per cent. of the total amount which shall have been expended in the country to fight this disease will have come from public resources.

Naturally the growth of the sanatorium and hospital movement, with the idea not only of care and cure, but of segregation and the removal of centers of infection, has been slow, but it is now moving with increasing rapidity. There are twenty-two thousand beds for tuberculous cases in the United States, obviously but a drop in the bucket compared with the necessities of the situation, but we can see fairly clearly the possibility of much more adequate provision along these lines in the comparatively near future. It is upon the extension of this specific equipment that we are laying particular stress at the present time.

Now, as we have progressed and branched out along the many lines of operation which have presented themselves, we have naturally come in touch with practically every one of these movements for public health or for social betterment which are represented here today. With respect to these movements, one great truth which should never be forgotten, has been brought out most clearly; namely, that the prevention of tuberculosis and the campaign against it is simply one phase of the great world campaign against preventable disease and in the interest of public health. While this should never be forgotten, we should also recognize clearly that the human mind is so constituted that in order to obtain results in any great field such as this, we must deal with specific problems. One cannot go to a community and talk generalities and get a response. If one talks tuberculosis or child labor or infant mortality, or prevention of blindness, one can get a response; and this, it seems to me, is at the present time the method that must be pursued and is entirely justified so long as we recognize always that we are simply co-ordinate branches of one great movement.

I see no reason for "viewing with alarm" the multiplication of these societies, if we recognize the true situation. On the contrary, their foundation is distinctly a sign of encouragement. Let us grant that with the rapid multiplication of societies there is a certain duplication of energy. Let us grant that a certain confusion in the public mind is inevitable, but let us not be misled into inferring that such duplication of energy and such unavoidable confusion approach in importance or even begin to outweigh the permanent and important results which are being reached.

That we should recognize these situations and be planning as wisely as may be to eliminate the disadvantages is obvious. I believe the best result

that can come from such a conference as this is not the laying down of a distinct plan of operation, because none of us is wise enough to say what is the best plan of operation, but to take some step looking toward constant conference and cordial co-operation and with a view to a possible ultimate union of all of these movements in one wisely administered campaign.

Personally, I think the best thing and the only thing that can be done will be some action looking toward a conference of committees from all of the public health agencies of recognized standing in the United States, to consider some preliminary plan for co-operation, and I hope that the initiative in such action will be taken by this Association and by no other.

Laboratory Section

HISTORY AND CHEMISTRY OF DISINFECTANTS.*

By DR. WM. DREYFUS,
New York City.

Man has an instinctive repugnance to all noxious odors, and from the earliest time has sought to mask their presence by the use of aromatic substances. The use of perfumes is probably a relic of the effort of primitive man to counteract this evil. Many religious ceremonies, such as the burning of incense, have also the same origin, and embalming, as practiced by the Egyptians, is a good example of successful attempts to arrest putrefaction in very early ages. Sulphur has been employed from the earliest times, and Homer describes its use in religious ceremonies. In the time of Hippocrates, sulphur was regarded as an antidote against the plague. Ovid makes mention of the fact that sulphur was employed by the shepherds of his time for bleaching fleeces and for purifying their wool from contagious diseases. During the plague of Athens, Acron, according to Plutarch, stayed the spread of the epidemic by lighting fires in the middle of the public places and in the streets where deaths had occurred; and the lighting of fires during times of plague has been customary until quite recent times.

The Mosaic law, with all its minute instructions as to the purification of the people and their belongings, shows the same combination of religious ceremonial and sanitary precautions. The preservation of physical well-being is looked upon in Judaism as a religious command. The neglect of one's health was regarded as a sin; and the Nazarite who vowed to abstain from wine was considered a sinner, as well as he who fasted or underwent other penance without reason. There was not a distinct department of public health in the government of the ancient Jews. The charge of infectious diseases, such as leprosy, and of epidemics of all kinds, was delegated to the priests, who acted as the physicians. The Talmud mentions the office of a physician in the Temple, whose duty it was to look after the health of the priests. In later times every town counted among its permanent officials a physician who supervised the circumcision

* Read before the Laboratory Section of the American Public Health Association, Milwaukee, September, 1910.

of children and looked after the communal well-being. A scholar was forbidden to live in a city where there was no physician. For domestic sanitation the commandments given in the Bible direct the covering of the blood of a fowl or of a wild beast with dust, and the covering of excreta with earth, and the appointing of a special place outside of the camp for depositing the excreta. In order to prevent the spread of leprosy, a complete system of quarantine laws was developed in the Levitical code. Here I may mention that from the data of various writers, it is reasonable to conclude that Biblical and modern leprosy are, in all probability, not the same disease, the former not being considered contagious, the segregation of lepers being regarded, at any rate, at certain periods, more in the light of a religious ceremonial than as a hygienic restriction. The numerous laws of purity and health scattered throughout the Bible were afterward regarded as important factors, and the system of bath ablution which forms a large portion of the Jewish laws of cleanliness has had a marked influence on the physical health of the people, so that in epidemics they have frequently been immune.

The Indian who, instead of embalming or burying his dead friend, hangs the body under a tree exposed to the air, makes use of the property of dessication, which, as is well known, is very efficient in arresting decay, and is the basis of a modern patent for keeping yeast. Earth is a very powerful deodorant and will also act as an antiseptic; the gases given off by decaying bodies are absorbed, and thus the burying of a body under proper conditions may be regarded as an efficient means of disinfection. The use of fire for cremating bodies undergoing decay or likely to cause a nuisance is, of course, an illustration of the employment of heat for the destruction of micro-organisms.

DISINFECTION IN THE MIDDLE AGES.

During the long period of the Middle Ages, the alchemists did little to advance our knowledge of this subject; they collected a few facts, and described, with more or less accuracy, the properties of some of the more important chemical compounds; but one may search in vain for a correct account of any example of preventive medicine. Notwithstanding the ravages of the cholera, the plague, and other epidemics, as well as the frequency of leprosy, the idea of contagion was only imperfectly understood, and the common people were far less cleanly in their habits than the Jews, for example, or heathen nations, who, as we have already mentioned, mingled primitive sanitary precautions with their religious services. Perhaps one of the earliest papers of any importance which we have is a "*Memoire sur les substances septiques et antiseptiques*," written by Pringle in

the middle of the eighteenth century. In this memoir some forty-eight experiments are described, in which the author took pieces of fresh meat and placed them in contact with various amounts of substances which he believed to have an antiseptic action. Amongst the substances tried we find common salt, sal ammoniac, acetates of ammonia and potash, nitre, borax, camphor, aloes, and succinic acid. These experiments, which were conducted in a very systematic manner, are even now not without some value. By taking as a standard the antiseptic action of sixty grains of salt on two grains of meat in two ounces of water, he was able to show that the other substances enumerated above had a greater antiseptic power than this standard, and thus succeeded in arriving at their relative antiseptic value.

BACTERIOLOGY.

Even the pioneers of modern chemistry at the beginning of the present century, did little towards promoting our knowledge of disinfectants, and it was not until the biologists showed that decay was due to the action of living organisms which float in the air, that fresh attention was directed to the subject. Francesco Redi, by protecting meat from flies with wire gauze, showed that the maggots which infest decaying flesh were produced from the eggs of the flies. Subsequently the formation of molds on the surface of jams, or other organic substances, was similarly shown to be determined by micro-organisms floating in the air. It was further noticed that filtration of air through cotton wool was effectual, not only in removing the dust, but also in preventing the ingress of micro-organisms.

The gradual accumulation of such facts as these by the biologists led the chemists to realize that the removal of the odor was not, after all, the only work necessary; and thus fumigation with nitrous acid, hydrochloric acid, chlorine, and other pungent bodies, which had been recommended, fell gradually into disfavor.

Pasteur's work, together with the general development of the modern science of bacteriology, has given to chemists a means of ascertaining the relative value of the various chemical substances discovered from time to time. It was to Pasteur's careful investigations that the close analogy which exists between fermentation and putrefaction was established. Pasteur himself defined putrefaction as "fermentation without oxygen," and showed that all decay was due to the action of organisms, the *Bacterium termo* being the common organism which begins eremacausis.

Owing to the slight knowledge which we possess as yet of the nature of the pabulum in which these bacteria of decay live, the investigation of the way in which they act is a matter of great difficulty. In recent years, however, the life-history of known organisms has been carefully studied, and the chemical changes which are produced when they live in media of known compositions have been followed. The organisms have been allowed to grow in solutions of calcium formate and calcium acetate, both of which substances have a definite chemical constitution. The bacteria decompose these salts, evolving carbonic acid gas, mixed with hydrogen in the former solution, and carbonic acid, mixed with marsh gas, in the latter. Lactic acid and its salts, butyric acid and its compounds, have also in recent years been examined bacteriologically. From studies such as these it seems to be clearly established that, just as yeast is killed by the alcohol it produces, when it converts sugar into alcohol so these other micro-organisms secrete chemical compounds which are inimical to their own life. In the decomposition of animal matter containing nitrogen, compounds which are soluble in weak alkaline solutions, and known as alkali albumens, are first produced; and these subsequently change into albumoses and peptones, to be again broken down into tyrosine, indol, and other compounds. These latter have strong antiseptic properties and illustrate the facts already alluded to, viz., that the products of decomposition are in the majority of cases themselves inimical to the bacteria which give rise to them.

By disinfection we mean that the power which the living organism possesses of infecting a healthy individual or animal has been destroyed.

This is brought about in various ways:

1. By natural processes, such as air, light,—particularly sunlight—rain, natural filtration, and dessication.

2. By mechanical means, such as artificial filtration, absorption and heat.

3. By chemical agents.

This comprises an exceptionally large group of products, and it is impossible in this short space of time to take them all up in detail. I shall limit myself only to a brief description of those that mostly interest the sanitarian, and endeavor to familiarize him with their most important chemical and bacteriological properties, in order, in the absence of official guidance, to make the proper selection, when the question of disinfection is brought before him.

While it is probably difficult to explain the manner in which disinfection is accomplished in many cases, still I think the subject is best approached from a purely chemical standpoint.

We can divide the disinfectants generally used into five distinct classes:

(A) Those that act as reducing agents.

To this group belong the sulphites, sulphur-dioxide, and ferrous salts, such as copperas. The reducing disinfectants are open to the objections that they are in great part wasted at first by the free oxygen of the air and the water, lose their strength by absorption of oxygen and do not act on anaerobic bacteria.

(B) Those that act as oxidizing agents.

To this group belong chlorine, bromine, hypochlorites, peroxides, permanganates, ozone, and various commercial preparations, whose efficiency depends on the amount of available chlorine. The greatest objections to the substances in this group is that they are very unstable, some rather expensive, and some corrosive to tissue and metals; they are mostly employed for special work only, such as water purification or sewage treatment.

(C) Those that act as absorbents and deodorants.

To this group belong sulphate of lime, or gypsum, slaked lime, and quicklime.

(D) Those that act by their toxic power and as precipitants of albuminous matter.

This group comprises most of the metallic salts, such as those of mercury, zinc, copper, silver, etc. Very little that is new can be added to the chemistry of this group. It is well known that, according to the theory of ionization, a salt when dissolved in water becomes more or less dissociated, and that the amount of metallic ions is greater with the chloride salt, than with any other, which probably explains their higher efficiency.

(E) Those that enter into chemical combination with albuminous matter and form new products that resist further decomposition by bacteria.

The most representative type in this class is formaldehyde, which is the ideal disinfectant for room fumigation, when properly used, i. e., in its gaseous form, in the presence of water vapor. Of late years, however, it has been found that in its aqueous solution, such as formalin, it is far inferior to pure phenol, possessing only one-third the bacteriological efficiency of the latter.

A good many disinfectants combine one or more qualities mentioned in the preceding grouping and thereby form a special class by themselves.

A group of organic substances obtained in the destructive distillation of tar, which constitute today the most important branch of disinfectants for all practical work, are products such as phenol, cresols, and phenoloids, and a good many commercial preparations containing the

above either with or without hydrocarbon oils, forming with water, either clear solutions or emulsions. Their action is based either on precipitating albuminous matter or on toxicity of their constituents, which is highest with phenol, and decreases as the hydrogen of the benzine ring is replaced by either methyl of hydroxyl groups. The best of these commercial products are far superior in their bacteriological efficiency to pure phenol or cresols, being less toxic and corrosive, and possess the great advantage over all other disinfectants, that their emulsions have a thoroughly cleansing effect, acting to all purposes and intent like a liquid soap. The superior efficiency of the emulsifying disinfectants is best explained by the fact that the particles of the emulsion exhibit active Brownian movement, and that the bacteria practically become surrounded by the disinfectant in much greater concentration than exists throughout the liquid.

In concluding, I should like to emphasize the fact that the time has come when the sale of disinfectants should be put under governmental and scientific control, for this industry has grown to such an extent in recent years that the public is entitled to protection from frauds and impositions.

THE TESTING OF LIQUID DISINFECTANTS.*

By HENRY ALBERT, M. D.,
Iowa City, Iowa.

It is a matter of common knowledge that of the very numerous liquid disinfectants which we find on the market and over the sale of which there is practically no control, many are almost useless as disinfectants, and many more are not as efficient as they are claimed to be. It is very obvious that there ought to be some standard by which different disinfectants may be compared. It is indeed true that such comparisons have often been made and that carbolic acid has usually been chosen as the agent with which others have been compared. It has frequently happened, however, that the results of different tests have greatly varied, and this has no doubt been largely due to the difference in method of making the tests. As an essential step, therefore, for standardization, it is necessary that the laboratory workers making the tests agree on some one method by which the tests are to be made. Without burdening you with tables showing the comparative merits of several different methods of testing liquid disinfectants as I have found them, I may say that I do not regard any method in which the micro-organisms used for the test are dried, as reliable. With the use of such under conditions apparently the same, I have obtained quite widely varying results. I have found that the "drop method," described by Rideal and Walker in 1903, or some of its modifications, gives more uniform results than any other method tried. Because of the uniformity of results obtained, the simplicity of the procedure and rapidity of making the test, I regard it as the best method which we have at the present time for the testing of liquid disinfectants. This method is, as yet, however, not entirely satisfactory. The results of different workers using the method have not always been the same. Some of the factors that have governed these varying results are:

1. The carbolic acid chosen for the test. Some of the published reports have been based on the use of carbolic acid such as is obtained from the commercial supply houses without any attempt at standardization. Many of the other reports so far published have apparently used carbolic acid standardized chemically by Koppeshaar's bromide titration method. Such does not, however, appear to be sufficient. Carbolic acid

* Read before the Laboratory Section of the American Public Health Association, Milwaukee, September, 1910.

may be standardized by this method and still contain cresols which may markedly increase its germicidal power. It is necessary to not only know the strength of the carbolic acid that is used but also to know that it is pure.

2. The organism used. *Bacillus typhosus* appears to be the most suitable organism for making the test. Nevertheless, different disinfectants appear to have a different effect on various organisms, i. e., one disinfectant may be more efficacious than another against a certain micro-organism, and the reverse be true when another kind of organism is used. More work should be done along this line. It may be that in making the test several different types of organisms should be used.

3. Temperature. It is well known that the higher the (ordinary) temperature the more efficient the action of the disinfectant. I have found that at a temperature of 60° F. a 2 per cent. solution of phenol failed to destroy the *Bacillus typhosus* after an exposure of four minutes, whereas at 90° F. the micro-organism was destroyed by a one minute exposure to the same disinfectant.

These three factors I regard as being of most importance. The age of the culture, kind of medium, reaction of medium, and temperature of incubation, I believe to be of less importance. Nevertheless, all of the factors ought to be carefully investigated.

With the adoption by scientific men and organizations of a method of standardizing disinfectants, it will soon become necessary for commercial concerns to indicate the disinfecting strength on the label of their products. It will then be necessary to verify their statement. This can be quite satisfactorily done by the larger organizations, and by many municipalities and states that have facilities for testing the reagents which they purchase. To do the greatest amount of good, however, it appears to me that tests ought to be made in a federal laboratory such as the Hygienic Laboratory of the Public Health and Marine Hospital Service, that the results of the tests be published, and if possible, that steps be taken to prohibit manufacturers from misbranding their products by means similar to those exercised by the pure food and drugs act, over the products concerned. If necessary, such control may be supplemented by tests made in state laboratories in order to govern the products sold in individual states.

SECOND PROGRESS REPORT OF THE COMMITTEE ON STANDARD METHODS FOR THE BACTERIAL DIAGNOSIS OF DIPHTHERIA.

When this Committee was first formed, a circular letter was sent by the Chairman to the members of the Committee in order to obtain their views as to the scope of work which should be undertaken. It was decided that the work of the Committee should not be restricted to technical details alone, but that questions of organization should also be considered, since much depends on the proper handling of specimens. The first year was devoted largely to correspondence, and as a result of this interchange of ideas, the first report was made outlining the future work of the Committee.

In the two years that have intervened since the first report, it has been found impossible to cover all the ground outlined, but much has been accomplished, and as is usual in work of this nature, some new lines of work have been indicated.

DISTRIBUTION AND COLLECTION OF OUTFITS.

(a) Cities:—Two entirely separate systems of distribution and collection of outfit must be considered—one for cities, the other for states. In cities, distances are not so great but that this part of the work can be kept very closely under control. Some cities make use of police stations as centers for distribution and collection, and of policemen for the final return of the outfits to the laboratory. Other cities use drug stores and paid messengers, while others have various modifications of these systems, varying with the ordinances of the city, and the ideas of the health officials. The Committee believes it immaterial what system is adopted as long as the outfits are kept in a proper manner, are instantly available for the use of physicians, and are expeditiously returned to the laboratory after use.

(b) States:—The distribution and collection of outfits in states presents a far different problem, owing to the distance factor. Some states make use of drug stores in centrally located cities and towns; others use local health offices; while others send the outfits directly to physicians. Various factors have to be considered in this question, it being apparently dependent to some extent on the class of health officers, whether laymen

or physicians; but the number of stations that can be established is dependent to a large extent on the size of the state and the extent of its resources. Since state outfits are more costly on account of the necessity of using mailing cases, or boxes strong enough to stand express handling, the greatest difficulty lies in the proper control of the stations. The average country drug store is lax in its methods, and even if paid for its service, is apt to look upon it as of little importance, and to neglect to keep constantly supplied, even if every facility is offered for so doing.

USE OF SERUM IN OUTFITS.

(a) Cities:—There appears to be no question but that the use of serum in outfits is advantageous in cities, since in the first place the difference in the time of the inoculation of the serum, whether at the bedside or the laboratory, is usually so small as to be of little moment, while the amount of labor saved the laboratory by the bedside inoculation is considerable in large cities. It may be claimed that laboratory inoculation would be more thorough, and this is probably true at first, but physicians in cities, as a rule, rapidly learn the proper manipulations. Some laboratories use glycerine in preparing serum with the idea that it delays drying, but this is open to serious doubt. The use of a sterilized cork stopper inside the cotton plug delays evaporation, and is in fairly common use. Since in cities the outfit stations are within easy reach, and old outfits can be readily exchanged for fresh, it is not the general custom to seal the serum tube hermetically.

(b) States:—Sealing becomes necessary, as the expense of exchanging outfits is considerable. The breaking of the serum in transit is also a factor to be considered. A much more important matter is the determination of the influence of the time and temperature factor on the inoculated serum on the value of the result obtained. If the serum is inoculated at the bedside, then each culture arriving at the laboratory will have been exposed for varying lengths of time to varying degrees of temperature, with the consequent opportunity for the growth of organisms antagonistic to the diphtheria bacillus. The temperature may vary in winter from that of the vicinity of the radiator in the express or post-office, to the freezing temperature of out-of-doors, or in summer, from the interior of the refrigerator to that of the direct sunlight; while the time factor will vary with the distance of the patient from the laboratory and with the transportation facilities. If the swab is left in contact with the serum after inoculation, a third factor, the influence of the swab material, be it iron, wood, brass, or aluminum, is introduced.

On the influence of the temperature factor on the overgrowth or antagonism of other organisms, nothing has so far been accomplished. On the factors of time and swab material three members of the Committee only were able to carry on experimental work.

Dr. Slack, with Dr. Arms and Miss Wade, taking six swabs at a time from 24 patients on cotton tipped swabs made of wood, iron, and brass, came to the following conclusions:

1. "For ordinary cultural work, where the serum is to be inoculated immediately after the swab is taken, wooden swab sticks give the best results, both in the number of positives obtained and the excellence of the types.

2. If inoculation is to be delayed a day or two, as is the case where swabs only are sent out from state laboratories and inoculated on their return, better results will be obtained from iron swabs.

3. The results obtained indicate that, with the ordinary cultural methods, negative laboratory results on positive cases, either for diagnosis or release, may often be due to overgrowth by ordinary throat organisms.

4. The adoption of the method of sending swabs only from the laboratory, to be inoculated on return to same, would result in state laboratories, where such swabs may be a day or two in transit, in more accurate diagnosis than is possible where immediate inoculations are made, and, incidentally, cases would probably be held longer in quarantine.

5. Leaving the swabs on the serum after inoculation has no adverse effect on the result when the culture is properly made."

The experimenters further emphasize that "It was noticeable not only that more positive results were obtained from the older swabs, but also that the types of bacilli were better and the cultures more nearly pure."

Dr. Anna Williams, working with six positive cases, found no apparent difference between cultures from swabs inoculated immediately and those inoculated after one, two, and three days, nor did she discover any reportable differences between serum growths exposed to iron wire and to wooden swabs.

In both of the preceding cases the cultures and swabs were taken directly from the bedside to the laboratory, the cultures incubated, and the swabs held at room temperature until inoculated.

Dr. Chesley obtained cultures taken by physicians from 440 patients. Of these, 204 cases showed diphtheria bacilli. Of the 635 cultures taken, 238 gave a different result on the swabs for laboratory inoculation from that shown by the bedside cultures. For example: Of 114 positive on the bedside inoculation cultures, none were positive from the same swabs

taken to the laboratory and inoculated, and only 14 showed suspicious bacilli. Five cultures only of those negative on the bedside inoculation cultures were positive on the delayed inoculations, and 6 only were suspicious.

These cultures were taken by practicing physicians in 118 different localities during midwinter. The fact that they were taken by local physicians, rather than by laboratory men experienced in culture taking, may account in a minor way for the discrepancy in results obtained by this member of the Committee, but the inference is strong that the temperature factor is more likely to be responsible.

From the results so far obtained, it would appear necessary to obtain further confirmative evidence on the effect of wood, brass, and aluminum swabs on the serum growth, both when the swabs are held for a time before inoculating and when held in contact with the serum, and to conduct further tests on the relative value of serum inoculations at the bedside and on delayed laboratory inoculations under such conditions that the factors of time, temperature, and personal equation may be properly controlled.

DRIED SERUM.

A dried serum has been submitted to the chairman during the past year, but too late and in insufficient quantity for tests by individual members. If it can be produced in sufficient quantities and at a reasonable price, it will undoubtedly prove of value, especially to laboratories situated at a distance from slaughtering houses. Preliminary tests indicate that media made from the dried serum is fairly satisfactory.

TYPES OF B. DIPHTHERIA.

There is a marked uniformity of opinion among the members of the Committee as to the types of bacilli to be considered positive for diagnosis and release, A C D and C_1 being considered by the majority as positive for diagnosis, and A_1 D_1 E G and E_1 as suspicious forms. One member of the Committee includes as suspicious E_2, and other solid types, if brilliantly stained. One member of the Committee does not follow Wesbrook's types, taking the ground that there are too many intermediate forms, and that the microscopic picture as a whole, including the grouping and the staining qualities of the organisms, must be considered. This is of course true, and is probably the unspoken opinion of the rest of the Committee; Wesbrook, himself, regards them as types only. The experience of the Chairman and of some of the other members of the Committee has been that Wesbrook's types are an invaluable guide, that in a positive culture some

of the above quoted forms will invariably be present in greater or less abundance, and that the recording of types by the diagnostician results in a beneficial mental attitude and training.

In order to measure the personal equation and the effect of geographical location, and to eliminate other factors, it was at first decided to send each member of the Committee serum and stain from the same batch, and to have positive cultures made on this special serum, slides made from these, diagnosis and types recorded, and the records and slides sent to the Chairman. It was then planned to exchange the slides, thus securing the opinion of each member of the Committee on each set of slides. During 1909, thirty tubes of serum and a four ounce bottle of Loeffler's methylene blue was sent to each member, but owing to a variety of causes, responses were so few as to be valueless for the purposes outlined.

During 1910, the experiment outlined was repeated with the modification that each member used his own serum and stain. The total number of slides per member was cut from thirty to twenty, on account of the amount of work involved in record keeping, etc. Some of the members of the Committee reported predominant types only, as requested, while others reported all types found. Summarizing the results, there appears to be a fair unanimity of opinion as to what should be called positive for diagnosis or release, but the difference, while small, is greater than it should be. There is a decided difference of opinion in the identification of types and in the selection of the predominant type.

It is evident that more work is necessary on types, and that to secure more comparable and prompt results it will be necessary to organize the work somewhat differently. For the coming year it is proposed:

1. To prepare, say, 25 smears, made from routine cultures, submitted for diagnosis (positives mixed with some negatives), and, say, 25 smears from cultures submitted for release from quarantine, and to submit these slides to each member of the Committee in turn, together with a prepared form or blank for reporting results. This should give better defined evidence as to personal equation both in diagnosis and in the selection of types.

2. To isolate pure cultures of diphtheria bacilli and to obtain, so far as possible, cultures of one type, submitting slides of such cultures to members of the Committee for the identification of types, for the acid reaction on sugar bouillons, and in the case of types not considered positive for diagnosis, for virulence.

3. To isolate in pure culture, xerosis, and other atypical bacilli of the diphtheria group for study of the acid reaction and virulence.

4. To study the variation in type due to variation in the composition of media and of other factors.

GEOGRAPHICAL DISTRIBUTION OF TYPES.

No distinct differences in type, according to geographical location, were noticed—with one exception, namely, Providence. The predominant types on the slides from this source were practically without exception solid staining small types ($C_2D_2E_2$). Gorham considers these organisms positive and virulent, and states that the larger forms are seldom to be seen in that vicinity. It might naturally be supposed that this difference in type might come from difference in the media employed or other purely local factors, were it not for the fact that this difference was noticed in 1902 during the experimental work on "Diphtheria in Well Persons," carried out under the auspices of the Massachusetts Association of Boards of Health. At that time cultures were exchanged between the Boston and Providence laboratories, but the Providence organisms remained small in form on Boston media, and the Boston organisms remained A's, C's, and D's on Providence media. Here is evidently a fruitful field for future work.

DETERMINATION OF VIRULENCE.

No experiments on virulence have been thus far carried out by the Committee. Future work should include:

1. The selection by the Committee of a standard method for determining virulence.

2. The determination of virulence of specific types in so far as these may be obtained in pure culture.

3. The determination of virulence of other members of the diphtheria group.

4. The determination of the point at which the line is to be drawn between virulence and non-virulence.

INCUBATION.

Experiments by certain members of the Committee have shown that atypical organisms from serum incubated over night may finally develop into typical bacilli by re-incubating the original culture or by making a fresh culture from the original. While, from the standpoint of practicability, the regular time of incubation must remain from 15 to 20 hours,

(overnight), there is a distinct advantage (over and above that of making an early report in positive cases) in making a microscopic examination at the end of five hours. It must be "recognized in dealing with cultures for diagnosis that the associated organisms may be either symbiotic, neutral, or antagonistic, and that while in a large percentage of cases the diphtheria bacillus may be relied upon to outgrow the other organisms in 15 hours incubation, there are a small number in which the associated organisms obscure the result at the end of this time, the diphtheria bacillus appearing in larger numbers either on shorter or longer incubation periods, depending on the growth of these other organisms."[9]

INTERPRETATION OF RESULTS.

In view of the fact that there is a tendency to place either too little or too great dependency on the results of bacterial tests, it is the opinion of the Committee that when the final report shall be written it should contain a carefully written interpretation of the meaning of positive, negative, atypical, and "no growth" results, in order that such bacteriologists may be in a position to quote the Committee on these points when bacterial and clinical evidence differ.

REPORTING AND RECORDING RESULTS.

While some variation may well exist in systems of recording and reporting results, yet it is suggested that some general system of working might well be adopted by the Committee in preparing its final report.

B. R. RICKARDS, *Chairman.*

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[9] Rickards, Slack and Arms.—American Jour. Pub. Hygiene, Vol. 5, p. 324.

Section of Municipal Health Officers

QUARANTINE OR ISOLATION IN DIPHTHERIA?

By JAMES ROBERTS, M. D.,
Medical Officer of Health, Hamilton, Ontario.

Most physicians engaged to any extent in the public health service do not need today to be convinced of the dominance of the personal contact factor in diphtheria.

Defective drainage, damp cellar, bad ventilation theories, as explanatory of the incidence of the disease, have for a long time been recognized on bacteriological grounds as untenable. As predisposing influences, the conviction is widespread that these and other circumstances play a significant part in its causation, and there is probably more or less justification for the belief that insanitary home surroundings, malnutrition, overcrowding, and parental neglect, all prejudicial to health, exert a more or less definite and favorable influence on the appearance and spread of diphtheria, tuberculosis, and typhoid fever.

In looking over our records for the past five years, no less than 45% of our cases, representing not more than one-fourth of the school population, are derived from the districts of the city where the industrial classes are centered, where the housing is inferior, the sewer accommodation insufficient, the families large, and where overcrowding exists to a greater or less extent. Furthermore, this population, largely impregnated with the foreign element, is very considerably below the average of the citizens in mental development, and hence lacks the ability to appreciate the laws of hygiene and sanitation, and it is this latter fact, after all, I believe, that acquires special emphasis, the more minutely we examine and investigate notifications of this disease whether appearing in endemic or epidemic form. Two recent experiences will illustrate this contention.

Late one evening one of our local physicians called me by telephone. She had just been in attendance on a case of laryngeal diphtheria in a girl of seven years. Until six o'clock the child had been apparently well, but shortly after the evening meal had suddenly been taken alarmingly ill and died in a few hours.

* Read before the Section of Municipal Health Officers of the American Public Health Association, Milwaukee, September, 1910.

The family, English immigrants, were living under the most objectionable conditions of housing and cleanliness. Cousins from a block away came crowding in to increase the excitement. Neither the slightest precautionary measures nor sensibility of danger were noticeable—plenty of beer being the only disinfectant. Two boys had lately suffered from sore throats. All of the children showed infection with Klebs-Loeffler and were sent to the hospital. Preventive measures were taken in case of family number two, a child belonging to which died in the hospital a few days subsequently.

Another recent notification of diphtheria came from number 63 X Street, with intimation that children living on either side had suffered from sore throats. Personal investigation at numbers 61 and 65 obtained the following information:

A boy at number 61 had sore throat a week or so before. A little girl and a young woman were suffering from mild and suppurating tonsilitis respectively. There had been a doctor in attendance for both cases—conclusive evidence to the mother's mind of its not being diphtheria. At number 65 the father, mother, and two children were suffering from sore throats of a suspicious character. The man made numerous protests against the insufficient drainage from the street causing dampness in the cellars; even the physician in attendance at number 63 had noted this as an important circumstance. I was informed from other sources that this family had just been visited by a child only recently discharged from a New York isolation hospital, after recovering from a mixed infection of scarlet fever and diphtheria. Cultures from the suspects in all three houses showed diphtheria bacilli.

Our New York visitor went from Hamilton to Toronto to the home of another relative. The two children were seized some days after with diphtheria in virulent form, the girl of 11 years dying within 24 hours after the first manifestation of clinical symptoms; the boy, 9 years old, a few days later. We are still receiving unfounded complaints of the sanitation of the street, so pertinaciously does the popular mind cling to traditional ideas.

Our notification tables indicate that diphtheria is most prevalent during the nine months beginning with September and ending with May, and exhibit the well known sporadic prevalence of it during the months when the schools are closed. The infection once introduced into the schools in September seems to be more or less easily disseminated among the susceptible children, and tends to become epidemic in proportion to the number of susceptible children present and the virulence of the

particular infection, with overcrowding, ventilation, and seasonal variations, for obvious reasons, as factors of more or less incidental importance,

The greater prevalence of the disease during the cold winter months, especially January and February, can with great probability be accounted for by the well-known observation that the delicate mucous membranes lining the air passages are then more liable to attacks of catarrhal inflammation. The air in the room becomes close and vitiated—the extreme temperature outside tending to drive the children inside where games and sports are indulged in under every circumstance calculated to facilitate direct infection from one to another. With the return of May and June come baseball and outdoor games, purification of the schoolroom atmosphere, sunshine and the genial warmth of spring, all contributory influences towards fortifying the resistance of the tissues and minimizing the spread of infection.

We find ourselves, then, face to face with the practical difficulty of controlling a disease, common knowledge of which shows that, while sporadic cases may occur in the most healthful localities, there is little tendency for its propagation and appearance in epidemic form unless the infection finds its way into a school.

From the school it travels to the home, to the infant and adult members thereof, and in too many instances, there is little reason to doubt, back again to the school, either by the child first attacked being allowed to return to school before its nose and throat are free from infection or by some other child in the same household who has not been attacked conveying the infection in some unrecognized way.

The question which at once suggests itself is: How best can we prevent our schools from acting as centers of infection when diphtheria has gained its entrance into them? Obviously, by endeavoring to ascertain and estimate the character and extent of the invasion by inquiry, inspection, and bacteriological examination of the noses and throats where circumstances suggest.

The Boston Board of Health, after a recent and somewhat extensive inquiry into the "Diphtheria Bacillus Carriers in the Public Schools," concludes "that at least 1% of all healthy school children harbor morphologically typical diphtheria bacilli, transiently communicable from one person to another and ordinarily of little or no virulence; that where diphtheria does not exist, isolation of such carriers of probably non-virulent bacilli is useless, costly, laborious, and productive of hardship to innocent and harmless parties; that an attempt to control diphtheria in a city by a round of cultures from all school children at the beginning of the school year does not seem encouraging; that the proposition to stamp diphtheria

out of a city by cultural tests of all the inhabitants, and isolation of all carriers, is impossible from any practical standpoint."

In other words, the restriction of this disease by boards of health is, for practical purposes, limited to isolation of clinical cases and control of the contacts in connection with these.

For the accomplishment of such a task, I believe hospitalization to be the ideal method in a certain proportion of cases where isolation cannot be strictly and effectively carried out at home.

To attempt to carry out forcible hospitalization is to be met at the outset with a pronounced and emphatic popular prejudice against it. One experience in the Province of Ontario exemplifies this quite clearly. The regulations concerning diphtheria adopted by the Provincial Board of Health and made an Order in Council March 5, 1903, are worded as follows:

"On the occurrence of the first or any case of diphtheria in a municipality, the Medical Health Officer at once shall place the person attacked in the isolation hospital, tent, or other place provided, and shall take proper measures for placarding houses, for the disinfection of personal clothing, and, if necessary, the destruction of clothing which may have been exposed to the contagion, and for the disinfection and purification of every house, conveyance, rail-car, steamboat, sailing vessel, carriage, or other vehicle which may have been exposed to the contagion." With respect to scarlet fever a similar mandate was inserted.

In the City of Brantford these regulations were enforced with little deviation from the literal interpretation, until the opposition there, though more or less evident from the first, was headed by the Ministerial Alliance. A newspaper clipping will serve to illustrate their attitude.

"The ministers of Brantford have taken up the question of the compulsory removal of scarlet fever and diphtheria patients to the isolation hospital. The issue has been a burning one in this city for the past couple of years and a live one in the Ministerial Alliance for a month or so back. Coming in contact with many homes directly affected by a drastic enforcement of the regulations, the local ministers have learned many tales of hardship. These they have investigated, and they have also looked into the real aspect of the situation and the manner in which the regulations are enforced in other centers. As a result, the Alliance has taken prompt action in the matter, and on Saturday night a deputation waited on the Board of Health. They presented a pretty strong case, and asked for a more sympathetic enforcement of the law. The Board promised the usual consideration. The case of the ministry, together with the discussion, makes very interesting reading."

As a consequence of this agitation the decision of the Attorney General was asked for as to the legality of the Orders in Council. The result was a somewhat nominal victory for the Alliance in that local boards of health were referred to Section 93 of the Public Health Act for a definition of their powers which, after all, are by no means restricted.

This prejudice towards hospitalization is attributable, in large measure, to the slow evolution of the isolation hospital toward efficiency and up-to-dateness. Formerly maternity hospitals were condemned by many by reason of the high puerperal death rate which, on the introduction of aseptic precautions, was reduced from an enormity to practically nil. Similarly, isolation and pure air has converted tuberculosis from an incurable to a curable and preventable disease, and the treatment has been most effectively carried out in sanitaria specially designed for the benefit of the patients.

The general hospital, also largely provided and supported by private beneficence, has for its sole object the benefit of the patients treated in it, and in this respect differs from the isolation hospital, the onus of supplying which has been placed by legislatures on the municipal governments.

The primary object of the infectious fever hospital was thus different from that of the general hospitals, as it was for the admission of patients who are a source of danger to the community in which they live. The patient and his welfare have been regarded as secondary to the protection of the community. This marked departure of the isolation hospital in its main object from the primary object of the general hospital has had considerable influence on its development. The general hospital has remained abreast of the times to meet the demands of science. Its wards, both medical and surgical, have been renovated and remodelled; furniture and equipment, operating theatres and laboratories have been kept up to date. Can the same be stated of the infectious fever hospitals throughout the country? In too many instances they have retained their primitive characteristics in structure and arrangement without the advance in precautionary measures designed for the protection of the individual, so marked a feature of recent medical progress. So long as hospital provision for these infectious diseases is the outcome of panic resulting from the actual prevalence of an epidemic or the anticipated invasion of a disease, these provisions will continue to be so inadequate and unsuitable as to justify the scare headlines in the daily press with respect to mixed infection and its too often tragical results.

Following upon an expenditure of sixty thousand dollars in the city of Ottawa for a modern and attractive, but by no means perfect, hospital, the combined death rate from scarlet fever and diphtheria declined from

188 for the two years previous to its erection, to 48 in the first year after, 9 in the second, and 5 in the third.

Of the 114 diphtheria cases, 105 were removed to the hospital with 3 deaths. Of 157 scarlet fever cases, 145 were so removed with 2 deaths,—figures which indicate that over 92% of all cases of diphtheria and scarlet fever were treated in the city isolation hospital with a case death rate in the former disease of 2.6% and in the latter of 1.20%.

Until such time as the whole public becomes educated to regard hospital management in infectious diseases in its proper light, and, more especially, until finances are forthcoming for the building and equipment of infectious disease hospitals on a scale attractive and efficient enough to popularize them, we must be content in a goodly percentage of cases, especially among the well-to-do classes, with isolation at home. The quarantine of these home cases by putting a placard on the door and leaving the inmates to their own salvation, as has been required by law, is immeasurably more stupid and unjust, and indicative of a higher grade of density, than the reluctance of parents to parting from their children. Much of the hesitancy and concealment with respect to the reporting of cases is occasioned by such procedures. We are heartily in sympathy with the new regulations of our Provincial Board of Health permitting those who do not have the direct care of the diphtheria patient or patients to leave the premises in order to attend to their regular duties, except under exceptional circumstances.

Our present day conception of diphtheria as pre-eminently a school disease makes it imperative that the inspection of school children should be thorough enough for the detection of early cases and of those children harboring virulent bacilli. When this has been accomplished, regulations intelligently enforced providing for the proper isolation of all cases, either at home or in suitable institutions, will be productive of better results and much less annoyance and hardship than the continued enforcement of antiquated laws and regulations incompatible with our present knowledge of diphtheria.

Section on Vital Statistics

REGISTRATION OF BIRTHS.*

By F. D. BEAGLE,
Director Division of Vital Statistics, New York State Department of Health.

As noted in the circular of information recently mailed to the members of the American Public Health Association, "The Section on Vital Statistics is for the purpose of bringing about closer official and personal association of registration officials, and PROMOTING THE BETTER COLLECTION, compilation, and utilization of vital statistics."

We know that if society is to continue it must constantly be recruited by births. While our population is being increased by immigration, if we are to have a healthy growth, the number of births must exceed that of deaths.

Early notification of births is essential for the prevention of disease, and the total number of births in a state or city is the basis of that most important ratio known as infant mortality. The full measure of protection to infant life can not be extended unless ALL births are promptly registered. If we are to obtain accurate statistics of births, it is necessary that every birth should be properly reported to the local registrar of vital statistics.

As the importance of birth registration and the utilization of the statistics is to be fully covered in the papers to be read by the speakers who are to follow me, I shall devote my remarks to the question as to "How may we best promote the better collection of birth records?" In discussing this point I wish to call attention to recent amendments made to the registration laws in New York State, and to the effect of such legislation.

In New York State, up to within a few years, physicians were given thirty days in which to report births, and while there was no stated time in which certificates of deaths were to be filed with the local registrar, the law required the issuing of a burial permit before a corpse could be removed for burial, and this necessarily required the prompt reporting of deaths, as no burial permit could legally be issued until a certificate of death had

* Read before the Section on Vital Statistics of the American Public Health Association, Milwaukee, September, 1910.

been filed with the person designated by the local board of health to issue burial permits.

Unfortunately, most of the local boards adopted an ordinance authorizing any member of the board to issue burial permits, and in the rural districts the Justices of the Peace issuing burial permits would neglect to file the certificates of death with the local registrar, in many instances, until months after the deaths occurred. Consequently the local registrar was months back in his returns, and the central office (State Department of Health) was continually receiving delayed returns which were not only a great annoyance to the Department, but which made it impossible to publish in our Monthly Bulletin accurate mortality statistics.

To correct this defect in the local registration, the Department devoted most of its energies through the Division of Vital Statistics to "jacking up" local boards of health, and to insisting upon prompt and complete reports of deaths being filed with the Department each month. The law was amended authorizing only the local registrar and health officer to issue burial permits; this insured the local registrar receiving prompt reports, and made it possible for him to file complete returns with the Department each month.

As our efforts to secure early and complete registration of deaths met with success, the Department was able to devote more time to improving the birth registration.

It was learned that many local boards of health were paying but little attention to enforcing the law requiring physicians to file certificates of births. When the State Department of Health insisted upon the local Boards enforcing the law, it was found that many physicians attending births had failed to make a note of the births attended by them; and, in making out the certificates at such time as suited their convenience, they would enter wrong dates of birth on the record, which later the Department would be called upon to correct, and which necessitated the filing of affidavits and a new certificate of birth giving correct date of birth.

To try to bring about a more prompt reporting of births, the law was amended in 1907 requiring physicians to report births attended by them within ten days, instead of thirty days, after the birth occurred.

By persistent efforts the Department succeeded in having the local boards of health take an active interest in improving the registration of births in their municipality, but the time limit made it possible for the physicians to put off from day to day the filing of certificates of births attended by them. It was therefore deemed advisable to shorten the time, in the belief that there was no good excuse for delaying the reporting of births.

Consequently, in 1909 the Department welcomed the recommendation of the Commission on Ophthalmia Neonatorum, of the American Public Health Association, to require physicians to report births within the shortest reasonable time, and the Department having been furnished with the necessary funds to provide the physicians throughout the state with the prophylactic solution recognized as an almost certain preventive agent for ophthalmia neonatorum, the law was amended requiring births to be reported within thirty-six hours after the birth occurred. This would not only tend to make prompt and complete reporting of births, but would also make it possible for the local boards of health to see that proper measures had been taken to prevent unnecessary blindness among the newly born; the information as to whether such precautions had been taken at time of birth being requested on the new form of birth certificate furnished local boards of health by the Department.

This amendment at first met with a good deal of objection on the part of the physicians, many claiming that the state had no right to demand such exacting services of a physician. To overcome this false impression the Department prepared a special article for publication in the Monthly Bulletin under the caption "The Physician and Vital Statistics," pointing out the fact that every physician in the State is protected by law, and that the state in giving them a license to practice medicine and safeguarding them in the practice of their profession, had a right, in return for the unusual protection thrown by the law around the profession of medicine, lawfully to require them to report PROMPTLY every birth as well as death occurring in their practice. A copy of this article was mailed to each of the physicians practicing in the state, and the objection to complying strictly with the law is gradually disappearing.

Of course, in some of the rural districts it is impossible to comply strictly with the law in filing certificates of birth within the time prescribed, but the rural physicians are making returns as quickly as possible. In the cities the law can be complied with, and the increase in the registration is gratifying, as is shown by the returns filed the first six months of the present year as compared with the corresponding period last year.

The registration laws require local boards of health to adopt and enforce local ordinances requiring compliance with the law. Some of the local boards have been active in enforcing such ordinances, the Board of Health, Town of Newburgh, in Orange County, recently having fined several physicians $25.00 for failing to comply with the law. One of our most active larger cities is Syracuse, where Dr. Totman, the efficient health officer, has been instrumental in having some 25 delinquent physicians and midwives taken to task for failure to observe the law.

In greater New York, where our friend Dr. Guilfoy is Registrar of Records, there is no hesitancy in prosecuting physicians failing to comply with the registration laws, and a fine of $100.00 is imposed in each instance.

Where a local board of health wilfully neglects to enforce the law, and the registration is incomplete, the State Commissioner of Health is required to send a representative to take charge of the local registration and correct existing defects, the expenses incurred thereby being a charge upon the municipality.

Of course it is difficult to obtain complete registration of births in some of our cities where there is a large foreign population, as in many cases physicians are not in attendance, and the midwives and parents, who in the absence of a physician are required to file the certificate of birth, are ignorant of the law, and also fail to realize the importance of a child's birth being recorded.

Some may say that the requirement that births be reported within 36 hours after the birth occurs, must result in a large number of incomplete records being filed, as many children are not named until some days after birth. While that is true, our law provides for the completing of such records, local boards of health being required to furnish physicians with a supplemental report blank which is to be left with the parents of children not named at time of birth, the blank to be filled out by the parents and filed with the local registrar as soon as the child is named. Upon receipt of the supplemental report, the local registrar enters the given name of the child upon his register and forwards the report to the State Department to be attached to the original return of the birth, thus completing the record on file in the Department.

There was a slight decrease in the reported birth rate in New York State last year, compared with that of 1908, but when we take into consideration the fact that there was a falling off in the marriages of over 20% in 1908, as compared with 1907, it is not surprising that there was a decrease shown in the birth rate in 1909, in spite of the fact that the registration of births in 1909 was more complete than in 1908.

With the constantly decreasing death rate we are experiencing, it is natural to expect an increasing birth rate, but it appears that the slight increase from year to year shown by the returns filed in New York State is due to the improvement in the registration, as undoubtedly there is a tendency to a decline in the birth rate. During the first six months of the present year there has been over 10% increase in the registration of births in the state, over the corresponding period of the previous year.

The percentage of increase in the cities above the New York State average is as follows:

Johnstown	55.2	Rochester	23.8
Middletown	45.1	Little Falls	22.8
Cortland	44.9	Glens Falls	22.4
Niagara Falls	37.1	Peekskill	20.7
Rome	36.8	N. Tonawanda	19.0
Watertown	36.4	Schenectady	18.9
New Rochelle	31.2	Newburgh	18.4
Plattsburgh	28.7	Olean	16.0
Hudson	26.0	Jamestown	15.0
Dunkirk	24.3	Albany	14.2
Oneida	23.9	Buffalo	11.3
		State	10.9

Thirty-seven cities in the state show an increase, and twelve report fewer births than for the corresponding period last year. The registration in these cities is at the present time being investigated by representatives of the Department.

It is most gratifying for me to be able to state that at the present time there is the most complete registration of births in the State of New York since the establishment of the State Department of Health in 1880.

The Massachusetts Association of Boards of Health

JANUARY—ANNUAL MEETING

Boston, Massachusetts

The annual meeting of the Massachusetts Association of Boards of Health was held at the Brunswick Hotel, Boston, on Thursday, January 26, Vice-President Samuel H. Durgin presiding.

The following list of applicants, approved by the Executive Committee, were elected to membership in the Association:

R. B. Sawin, of the Brimfield Board of Health.
John A. Osgood, of the Lowell Board of Health.
Dr. James H. Drohan, of the Brockton Board of Health.
Dr. John J. Marlin, of the Beverly Board of Health.
Dr. John H. Tobin, of the Lawrence Board of Health.
Dr. George W. Gay, of Chestnut Hill, Newton.
Dr. L. Dionne, of Ware, Mass.
Dr. Clarence H. Staples, Bacteriologist, Malden.
Dr. Charles A. Reese, of the Wellesley Board of Health.
Dr. Ernest P. Fuller, of Lawrence.
Dr. George E. McPherson, of Attleboro.
Dr. Alexander M. Burgess, of Cambridge.

DR. KENNEDY. Are all those proposed for membership members of boards of health, or are some simply interested in health matters? Some have been admitted to this association in the past who are not members of boards of health, and I should like to know the policy of the Association.

VICE PRESIDENT DURGIN. While in the first place designating as preferable members of boards of health, the Association, under its by-laws, has allowed also the admittance of others to membership who are not members of boards of health, but simply interested in health work. The constitution reads as follows:

"All persons holding appointments as members of a board of health in any Massachusetts city or town, the executive officer of such a local board, and the members of the state board of health, and such other persons as may be elected, shall be eligible to membership."

Report of Treasurer for 1910.

RECEIPTS.

Balance from 1909	$1,383.68
Annual Assessments	640.10
Interest at Savings Bank	53.04
Total Receipts	$2,076.82

EXPENSES.

Subscriptions to Journal and half-tone plates	$ 371.25
Stenographic reports of meetings	79.96
Clerical assistance to Secretary and Treasurer	34.25
Postage and printing for Secretary and Treasurer	95.43
Postage and printing for Committees	89.11
Cigars	22.50
Treasurer's Bond	4.00
Total expenses	$ 696.50
Balance to 1911	1,380.32
Total	$2,076.82

Of this balance to 1911, $1,339.75 is in the Central Savings Bank of Lowell, drawing interest.

Respectfully submitted,

James B. Field, Treasurer.

Examined and approved as correctly cast and properly vouched for,
January 23, 1911. J. Arthur Gage, Auditor.

Dr. Field. The Association made a better financial showing in 1910 than in 1909 and 1908. In the year just closed our annual dues fell short only $56.40 of paying our expenses, whereas in the two previous years the shortages were $133.73 and $118.32. With a lessened expense for postage and printing by special committees, we can prevent further encroachments upon our interest-bearing surplus. With the vicissitudes of the Journal in the past and the possible rulings of the Post Office Department in the future, we are safe only with an emergency fund to draw upon.

Nineteen hundred and ten shows the largest membership. Three hundred and twenty annual dues were paid. With a constantly changing membership, and a natural forgetfulness either to pay dues or to resign, it is

not strange that a lenient treasurer will carry upon his books for a few months a certain amount of dead wood in membership, amounting with us to about 7 per cent. of the total membership, and of course increasing our expenses in that proportion.

(On motion of Mr. Coffey the report was received and placed on file.)

On motion from the floor, a Nominating Committee of three, consisting of Drs. Emerson, Tobey, and Woods, was appointed by the Chair to nominate officers for the ensuing year.

The Committee on Milk Legislation desires to report that a large amount of proposed legislation bearing directly on milk is to come before the present legislature, and that such bills as are available, through already being in print, have been considered by the Committee. Some have merit, and others, from the standpoint of boards of health, should be opposed. No complete report is possible at this time, as many of the bills are not yet printed, but as soon as all are available the Committee will send a circular to all local boards of health, stating the attitude of the Committee on each bill.

GEORGE E. BOLLING, Chairman.

(This report of progress was accepted and placed on file.)

REPORT OF THE COMMITTEE ON SEX HYGIENE.

During the past year, the Committee had reprinted its three leaflets for popular instruction on sex hygiene several times, and has distributed between ten and fifteen thousand of each of these leaflets. At the last annual meeting the Committee was denied any further appropriation from the funds of the Association, owing to the condition of the treasury, and at the same time was authorized by the Executive Committee to secure private donations to maintain its work and print these circulars. During the course of the year the Committee has received $242 from the sale of circulars and from donations, out of which it has spent $95.31, leaving a balance on hand at present of $147. The Committee has immediate need for all of this $147, and more, because it expects to receive a great many calls for the circulars, as a result of a circular letter which the Committee is just sending out. This letter, which includes the whole report of the Committee as it was adopted by the Association two years ago, has been sent to the city superintendents of schools in New England, to the district superintendents, to the high school principals in Massachusetts, to the hospitals and dispensaries which report to the State Board of Charities, that is, the legitimate hospitals and dispensaries in Massachusetts, and to the presidents of the colleges. Altogether about 1300 letters have been sent out, urging

upon the above-mentioned officials and institutions the adoption of our general program and the distribution of our circulars. We offer to send the circulars if they will distribute them, inviting them to pay for the circulars at twenty-five cents per hundred, if they wish to do so. Most of those using the circulars are willing to pay the printing cost, but the Committee will need probably more than the balance which it has on hand for the prosecution of its work.

The Committee wishes to renew its recommendations:

1. That the school authorities have judicious instruction given to grammar and high school students on sex hygiene.

2. That the State Board of Health be requested to ask all local boards to include syphilis and gonorrhea among the diseases to be reported to them as dangerous to public health.

3. That this Association request the State Board of Registration in Medicine to include the prevention and cure of syphilis and gonorrhea among the subjects of its examination.

4. That the State Board of Health be urged to send to all local boards of health, for distribution to persons having syphilis or gonorrhea, a printed leaflet or card similar to circular No. 2 of this Committee, setting forth the source, nature, and means of control of these diseases.

5. That every general hospital be asked to make provision for admitting to its wards cases of both of these diseases. We feel that it is much safer to have such cases treated in hospitals than to have them treated as at present.

6. That the State Board of Health laboratory and the local board of health laboratories make free bacteriological examinations for physicians of smears from the eyes of infants suspected of having gonorrheal ophthalmia, and of smears from the genito-urinary organs of persons believed to be suffering from gonorrhea.

The Committee reports with great satisfaction that during the past year the State Board of Health of Massachusetts has distributed to all physicians a convenient phial of nitrate of silver solution for use in protecting the eyes of new-born infants from gonorrheal infection. The first provision for the free distribution of such prophylactic was made by the Rhode Island Board of Health and was followed by the New York Board of Health, and since by Massachusetts, Ohio, and several other states.

The Committee suggests that the practice be continued until the next annual meeting.

Respectfully submitted,

LEWIS M. PALMER, M. D., Framingham, Chairman.
GARDNER T. SWARTS, M. D., Providence.
H. LINCOLN CHASE, M. D., Brookline.
WALTER E. KRUESI, Boston, Secretary.

(On motion of Dr. Washburn the report was accepted and the Committee continued for one year.)

REPORT OF THE NOMINATING COMMITTEE.

Dr. Emerson, Chairman of the Nominating Committee, submitted the following report:

For President, Henry P. Walcott, M. D.

For Vice-Presidents, Samuel H. Durgin, M. D.; C. V. Chapin, M. D.

For Secretary, James C. Coffey.

For Treasurer, James B. Field, M. D.

For Executive Committee, for two years: C. H. Eidam, M. D., Lawrence; F. A. Woods, M. D., Holyoke; M. U. Pierce, M. D., Milton; George E. Bolling, Brockton; H. L. Chase, M. D., Brookline.

(On motion of Dr. L. A. Jones, of North Adams, the Secretary was authorized to cast one ballot for the nominees of the Committee, and the nominees were declared the duly elected officers of the Association for 1911.)

MODERN BOARD OF HEALTH METHODS IN A SMALL TOWN.

By C. K. BLANCHARD,
Agent of the Board of Health of Wellesley, Massachusetts.

The problems met by the Board of Health of Wellesley, a residential town of about 7,000 people, are probably similar to those which arise in many other small towns of the state. The Wellesley Board of Health is composed of three members, each of whom, except the secretary, who receives a nominal salary, serves for three years without compensation.

Prior to June, 1909, five men were employed on a part time schedule. The members of the Board themselves gave their spare time to abating nuisances and to performing other similar duties. This organization was unsatisfactory, because much of the work was naturally performed in a perfunctory manner, and the system lacked co-ordination and intelligent direction. In the spring of 1909, some change being imperative, as an experiment, I was employed to do all the work of the Board.

To provide the necessary headquarters and facilities for work, an office and laboratory were established in one of the town buildings, and the equipment for simple bacteriological and chemical work was purchased. A microscope, incubator, and sterilizer, for the bacteriological work, and a balance and centrifuge for milk testing, together with the necessary glassware and reagents, completed the laboratory. These, with the usual furniture for an office and meeting room, cost about $300. The office is equipped with telephone service, and the various national and state health publications, as well as bulletins from cities in different parts of the country and from private sources, are kept on a reading table for convenient reference. The office is the central station from which physicians may obtain culture, sputum or blood outfits, vaccine, antitoxin, or silver nitrate solution at any hour of day or night. Opportunity is also afforded for incubating cultures at any time. The supplies mentioned may also be obtained at a sub-station in another part of the town.

The plan was to do the laboratory diagnoses for the local physicians for diphtheria, tuberculosis, typhoid fever, and malaria; to test milk for fats and solids, and, to some extent, make bacterial counts. This plan has been followed from the start, and, we believe, with satisfactory results.

Last year the following work was done at the laboratory:

Cultures from nose and throat	63
Sputum examinations	19
Widal tests	5
Blood examinations for malaria	4
Chemical milk tests	119
Bacterial counts for milk	5

The office hours of the agent, from 8:30 to 11 A. M., allow time for laboratory and office work, receipt of communications, and similar routine. The remainder of the morning and the whole afternoon are devoted to visiting quarantined premises, placarding and disinfecting for communicable diseases, inspection of plumbing, inspection of dairies, markets, etc., investigating complaints, or superintending the collection of garbage. As we have had very little trouble in securing reports of contagious diseases, except in cases of measles, it is seldom necessary to examine suspicious cases where no physician has been called. When necessary, investigation is made by one of the physicians on the Board of Health.

The present system has many advantages. The value of regular office hours and prompt attention to business is obvious. There is decided gain in the co-ordination of all parts of the work. The one who diagnoses a case of diphtheria also placards the house, gives directions for the quarantine of the patient and sees that they are carried out, examines the release culture, and, finally, disinfects the house and issues the permit for the child to return to school. Again, the collecting and testing of milk samples and the inspection of dairies is done by a man familiar with the conditions under which all the milk is produced, and personally acquainted with the producers themselves. The system also results in a marked saving of time by allowing the Board to devote its limited time to deciding important questions.

It is well understood that the great need of today in public health work is education. We cannot expect support from citizens who have little or no conception of what we are trying to do, nor can we hope to reduce greatly communicable diseases until the public have some intelligent idea of infecting organisms and means of guarding against them. For the purpose of spreading the knowledge of these subjects, we believe that a trained agent or health officer would be of great value to a small town. But the question may arise, "Why should not the physician of the Board attend to this?" Unless he is the only physician in the town, there would be serious objections to his visiting all contagious cases. It is hardly necessary to say that he must consider his own practice first and

use great discretion in his public service; whereas, a person having no practice to consider may act in each circumstance solely as the representative of the Board of Health.

With a person giving his whole time to the work, it is possible to do not only a greater amount of work, but also more varied kinds of work than could otherwise be done. For example, inspections of all kinds, frequent visits to quarantined premises, close watch of possible nuisances, general supervision of the sanitation of a town, could be cared for instead of carrying out merely the duties imposed by law or by clamorous public opinion.

There are, of course, disadvantages in this system. A man cannot be a specialist in all branches of Boards of Health work—in laboratory diagnosis and plumbing inspection, for instance, he will not have the skill or experience that is secured by employing different persons, each trained in his own department, and giving his whole attention to work of one kind. A decided disadvantage in the minds of some taxpayers would be any increase in expense. Unquestionably, if the whole time of a man capable of doing the diagnostic work and the chemical and bacteriological milk tests is to be secured, the cost will be greater than the appropriation made by some towns. In Wellesley, however, with the exception of the amount expended for laboratory equipment, the cost of the year's work in 1909 under the new system was approximately the same as if the old methods had been retained, or about $1100. The figures for 1910, computed on the same basis, seem less favorable, being roughly $1100, if the old system had been retained, as against $1500, the actual cost. It should be remembered, however, that this comparison is not a just one, as a great deal of work was done that would not have been undertaken with the old methods and a smaller appropriation.

It is not my intention to suggest the system of administration just outlined as applicable to all small towns or even to all large ones. But there are doubtless many towns in the state where the system, with a few changes, could be used to advantage.

In conclusion, I should like to suggest a modification of this system, which seems practicable, and which, if adopted by the smaller towns, would increase the efficiency of health department work throughout the state, without calling for greatly increased appropriations. This could be accomplished, I believe, by the Boards of Health of two or three adjoining towns combining to secure the services of one or two trained men, who would carry on the work of the towns much as the agent does in Wellesley. Combinations of this kind are especially provided for in the laws relating to hospitals for contagious diseases and inspection of plumbing, and are in accord with the movement for efficiency everywhere.

Two men might be employed to advantage in such a system; one a bacteriologist and chemist, or a sanitary biologist, to direct all work, attend to office and laboratory duties, and take charge of the enforcement of quarantine, while the other would do the inspection work, investigate nuisances, collect milk samples, and perform similar duties. This would form an efficient administration, and would give excellent service at small expense for each town. Each district would have its laboratory where diagnostic and analytical work could be done quickly. At the same time each town would keep its individuality, have its own Board of Health, and conduct its affairs as now. Such a plan would be especially advantageous in a small town where the Selectmen are the Board of Health, or where the members have but little time to give to their duties.

This method would also perfect the organization of health work throughout the state. With the State Board of Health having general charge, with State Inspectors in charge of large districts, as at present, and sanitary biologists in charge of the actual work in the cities and from one to three or four adjoining towns, but working under the direction of the local Boards of Health, the organization for the care and control of communicable diseases, for securing clean milk, clean conditions under which food is handled and sold, and sanitary conditions throughout the state should be more complete, efficient, and practicable.

MODERN BOARD OF HEALTH METHODS IN SMALL CITIES.

By SELSKAR M. GUNN,
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As the time at my disposal is insufficient for a discussion of all the problems that confront the Boards of Health of small cities, I shall content myself with some remarks on certain important phases of the work.

It is rather difficult to define what is meant by a small city, but, for the purpose of this paper, I am going to consider as such, those communities with a population of from about ten to fifty thousand. It was my good fortune to serve as health officer in a city with a population of approximately 27,000 for nearly two and a half years, and I hope that some of my experiences and reflections may be of interest and value.

The history of the subject has demonstrated that most of the real advances in sanitary science and practice have arisen through the needs of large cities. In great cities, the magnitude of the insanitary conditions, combined with the immense amount of preventable sickness and loss of life, have commanded the attention of health authorities and have given rise to the inauguration of steps to attempt to offset the evil conditions of environment, or the serious results of ignorance, which have largely caused these dire results. The smaller cities in many parts of the country have only recently commenced to arouse themselves from their lethargy and to realize that the problems of the large cities are theirs also, though on a reduced scale. Many small cities, unfortunately, have not yet awakened from their sleep, though I think we may take pride in saying, that, in general, the small cities of this commonwealth cannot be truthfully included in this group.

It might seem unnecessary to state that the first essential for a Board of Health of any community is to have sanitary rules, which are up-to-date, but yet within the legal limitations. We oftentimes would like to adopt new rules, but we must not let our enthusiasm carry us to the point of passing regulations which we cannot legally enforce. Many health departments do some of their work on "bluff." It is a poor policy in the long run, even if it may at times bring results.

The second essential is, of course, to have adequate means of enforcing the health code. This necessitates, first, a staff of trained workers who should be adequately recompensed; second, the maintenance of a suitable office for the proper keeping of records and where someone can be found

at reasonable hours to answer questions, issue permits and respond to emergency calls; and, finally, the necessary equipment of disinfecting apparatus, sample cases, and the general apparatus for chemical and bacteriological analyses. Too frequently we find the health department —the most important office in the city—housed in a miserable room and presenting anything but the appearance of a modern city office.

Modern practice calls for the care of all records of vital statistics to be in the hands of the health department. This provision is essential as far as records of deaths and births are concerned; and perhaps the time will come when marriage licenses and certificates will also be generally looked after by the Board of Health. The modern practice, imperfect at the present time where in force, of demanding certificates of health from prospective brides and grooms, makes the health department the natural place for the issuing of licenses and the filing of certificates.

Vital statistics are recognized as being a valuable aid to sanitary science. If scientifically applied and interpreted they can be used as an instrument for measuring the sanitary status of a community, and they can be made to point out the weak spots and thus to indicate where special efforts should be directed. They can be used to measure improvements in the health of a community by indicating decreases in the number of deaths or cases of preventable sickness. We must always remember, however, that if they are inaccurately and unscientifically used they may be literally worse than useless. A campaign against infant mortality, for example, would be lacking in its greatest aid if the statistics of infant births and deaths were not available and made use of. It is a surprising fact that many boards of health of small cities do not control these important records, which they naturally should do.

The whole problem of nuisances seems to call for some comment on account of the attention that is given to them by health departments. It is perhaps hard to imagine a condition when nuisances shall no longer be dealt with by boards of health. Sanitarians are realizing more keenly every day that the vast majority of nuisances that take up so much time do not affect the public health, or, if so, in an inappreciable manner. This is particularly true in those small cities which are fortunate in having a good water supply and sewerage system, thus obviating the privy, the leaky cesspool, and the resulting polluted wells, which are, of course, nuisances of real sanitary import.

Nuisance work is largely police work, and, in my opinion, should be performed by individuals primarily connected with the police department, so that the health officer and his assistants may be able to devote their time to real questions affecting the health of the city, and not to the

inspection of dumps, ash heaps, dirty cellars, weeds, noisy phonographs, cackling hens, and the like. The modern trend is to make the plumbing inspector responsible to the city engineer, and this is as it should be. Perhaps we may yet see the nuisance inspectors put under the city police department and granted the full police powers so often lacking to the sanitary inspector, and, therefore, there may be greater efficiency in doing away with conditions that are distinctly objectionable but not necessarily unhealthful.

A few words with regard to modern practice in combating tuberculosis. It is becoming recognized more generally that the most important factor in helping to decrease this disease is the segregation of the patients. We must have better facilities for the hospitalization of our consumptives, particularly for the advanced cases, which too frequently are neglected in our enthusiasm and desire to cure the incipient cases. We simply must remove the advanced cases to a safe place, if we are going to cut down the incipient cases. We need greater authority to deal with the careless consumptive who jeopardizes the health and lives of those living near him.

I note in some board of health reports of this state, comments on the difficulty of obtaining reports of cases of this disease. My own experience in Orange, New Jersey, may be of interest in this matter. The Board of Health of that city in 1905 placed tuberculosis on the list of reportable diseases. In 1906, thirty-eight cases were reported and seventy-two deaths; in 1907, forty-one cases and sixty-eight deaths. On my assuming the health officership in March, 1908, I noticed the great discrepancy between the number of cases reported and the number of deaths registered. I sent out a courteous appeal to the physicians and made a point of following up all tuberculosis deaths that had not been reported as cases previous to their death, in order to find out the reason for the neglect, and I was able in that year to increase the number of cases reported to 116, and in 1909, to 127. It is now a very rare occurrence to receive a death certificate with tuberculosis given as the cause of death, where the case is not already on file in the office and the circumstances of the case known. We well know that one of the great difficulties in the tuberculosis problem lies in the fact that it is a hard task for a board of health with limited help to follow up the cases and keep track of them as they move from one part of the city to another. I made an arrangement with the local Anti-tuberculosis League to permit the board of health to appoint their visiting nurse as a sanitary inspector, her salary being paid by the League. This gave her the necessary authority to visit all cases which we considered it necessary to watch and made her an important figure, on account of her official badge, particularly in the eyes of the foreign

element, who were thus more apt to do what she told them. A tactful, gentle woman can frequently be of great service in persuading dangerous advanced cases to follow out directions in the home that will tend to minimize the dangers to those living in the same house or tenement. Not infrequently she can induce cases to go voluntarily to hospitals where they can be absolutely controlled. Incipient cases can likewise be urged to go to sanatoria, and day camps; and, not infrequently, the nurse can find other cases, perhaps in the children, and get them to go to a dispensary or elsewhere, for treatment. Finally she can see that a proper diet is obtained, where poverty prevents, by bringing the case to the notice of the diet kitchen, milk depot, or other private social agency in the community which may be doing such philanthropic work. Many of these organizations are not doing the effective work that they are capable of, because they are not in a position to discover the cases which they really should be assisting. They have oftentimes to take the cases as they come, irrespective of the real need, and so many who most need help are never reached.

All of this emphasizes the important fact that in small cities, the health department should co-operate in every way possible with all the private social agencies that are at work in the city. These agencies are not infrequently doing work that properly should be done by the health department, but which, through the parsimony or false economy of the city fathers, cannot be undertaken at the present time. Anti-tuberculosis leagues and milk depots are examples of this.

A sanitary inspector, if he is wide awake, will discover cases of destitution and distress which, although out of his province, should be referred to the local Bureau of Associated Charities for assistance. My own experience has shown this to be the case on many occasions. The visitors of the charity organization, too, find conditions that come within the province of the health department. Under such circumstances, a mutual feeling of good-will will be an important factor in efficiency. Too frequently we find the health department at loggerheads with the local private social agencies, or *vice versa*. There may be good reasons on occasion, but if a proper spirit of harmony exists, the health department will find valuable coadjutors in these organizations who may be of great value and influence, when it comes to questions of getting the proper appropriation for the board of health.

There is one subject which is a very important factor in health conditions that I fear is not getting the attention that it deserves in small cities. I refer to the housing problem. Many of our small cities at the present time have bad housing conditions—not only bad occupancy but also

bad construction. The great problem is perhaps not so much the eradication of existing insanitary conditions, necessary as this is, but the enactment of proper legislation which will prevent the erection of buildings that will be the despair of succeeding generations of health officers. It may be more dramatic to carry on a vigorous campaign against existing bad housing conditions than to advocate legislation to arrest this growing evil, but the latter method is really truer prophylactic work and worthy of the attention of boards of health. It seems to me that the time is ripe for concerted action, in order to obtain state legislation that will make it impossible for small cities to have overbuilt and insanitary areas of dwellings erected within their limits, and I offer this suggestion for careful consideration.

Time does not permit my referring in detail to modern methods of safeguarding the food and milk supply. The boards of health of this state, as evidenced by their reports, are, as a rule, making headway with these important problems.

Score cards for dairies and milk depots are being used more extensively from year to year, and, despite criticisms, they are, in my opinion, useful agents in bringing about improvements. It is to be hoped that a card may soon be available that will be sufficiently satisfactory to be generally adopted. At the present time there are various cards in use, and it is difficult, if not impossible, to compare the results of scoring in one city with those of another. Score cards are being used in a few places for stores, butcher shops, groceries, and vegetable stores—where all kinds of food are sold.

An excellent scheme is in use in a very few cities where inspection cards are given to all inspected stores in which the sanitary conditions are up to the standards of the board of health. I am told that it is a great incentive to stores that fall below this standard to improve, so that they can pass the inspection satisfactorily, and thus be able to display their cards. Constant re-inspection is, of course, essential in such a scheme. Barber shops and laundries can also be treated in the same manner.

I should like to say a few words with regard to the subject of annual reports of the boards of health of small cities. Last summer Mr. Maurice Scharff, of the Institute of Technology, at my suggestion sent out a circular letter to the boards of health of all cities whose population was estimated by the Census Bureau in 1908 as between twenty and fifty thousand, asking them to send him a copy of their 1909 report. He sent out one hundred and seventy-five letters and received seventy-seven replies—ninety-eight making no reply. Thirty-nine of the replies were in the form of an annual

report; three sent monthly reports; and ten sent letters to say that the 1909 report had not yet been printed (Aug. 1, 1910). Twenty-five wrote that they issued no report.

Mr. Scharff kindly turned these reports over to me, and I have obtained others independently, so that I have had an opportunity to look over 56 annual reports. Twenty-five are reports of small cities in Massachusetts, and it is easily seen that the Massachusetts reports are on the average more satisfactory than the reports of less enlightened cities in other states.

The value of an annual report is readily seen. The preparation of it is a good thing for the health officer. He has to stop and go back over the year and see what he has done to improve the sanitary condition of his city, and the mere fact that his work has to be published, and the report is to be circulated in the city, is an added incentive to him to make a good showing.

The wide divergence of method in drawing up these fifty-six reports examined has appealed to me. There is a great lack of uniformity—a very desirable quality—and in the majority of these reports, little evidence of any general plan. We should recognize that the reports are not merely for the information and use of the city in which they are issued. A good report has a field of greater usefulness. It enables others to see what methods we use and the results that we obtain, and we too can secure benefit by the examples of others as shown in these reports. We do not pay enough attention to the reports of other health officers and do not reap the benefit of their experiences or give them the benefit of our own.

You may be surprised to hear that in twenty-four of the fifty-six reports there is no hint made of the population; this omission was found in 13 out of twenty-five reports of Massachusetts cities. The methods of recording vital statistics are too numerous to mention. In the matter of mortality statistics, all kinds of classifications of deaths are used, the alphabetical method being the most common. It is a sad commentary on the intelligence of a registrar where we find phthisis and tuberculosis classified separately, phthisis in the "p's" and tuberculosis in the "t's". In one report there were recorded 6 deaths from phthisis and 37 from tuberculosis, and there were other examples of a similar nature, where certain diseases having several names were recorded as being apparently entirely separate and distinct.

The standard International Classification, or Bertillon System, was found in 10 out of the 56 reports examined. Modern methods demand that this classification shall be used in all instances.

Birth and infant mortality statistics were, with a very few exceptions, entirely omitted. The omission of birth records is of course easily under-

stood in southern and western cities, but not so easily in states where the birth returns are more or less complete and accurate. In only a few of the reports examined was I able to find statistics of the number of deaths under one year per 1000 births, or any other statistical information that would give a satisfactory measure of the infant mortality.

Financial statements of the expenses of the health departments were found in 32 instances. We must tell how much, or perhaps too often how little, we spend—other cities need this information. Salaries are usually lumped together. In sixteen instances the salaries of the various employees of the Board were given. They should always be given in detail. We should let the public know how little we pay our health officials.

Time will not permit my going into many other discrepancies. It seems to me that this whole matter is worthy of the attention of this Association. Might it not be a good plan to appoint a committee to consider the possibility of drawing up a standard form of report for boards of health of this state, giving all the necessary liberty for the discussion of purely local problems? There are certain facts and figures that should be given in all health reports.

It should be impossible to read, as in one report, that "out of 22 cases of contagious and infectious diseases reported there were only three deaths" and then be able to turn over two pages and find a table of the causes of death, with 4 deaths from diphtheria, 7 from typhoid fever, and 10 from pulmonary tuberculosis.

A final consideration, but an important one, is the vital question of education. Sanitary science has advanced markedly in the past few years; and to my mind one of the greatest advances consists in the recognition of the fact that it is PERSONS rather than THINGS that are the chief cause of the spread of infectious disease. Contact infection is coming to be considered the most important method of infection, and in order to combat infection from this source, we must have an increased knowledge of what clean living really means. This can be accomplished only by education, and progressive boards of health must constitute themselves into an unofficial educational body and use all means to spread the gospel of sanitary living. Those in actual charge of the education of our children must be made to realize the importance of the proper teaching of hygiene in the public, parochial and other private schools. The newspapers and the lecture platform can likewise be used to great advantage. We have a number of examples of such educational campaigns being carried on in different cities in the United States. In many places circulars on many topics of sanitary significance are also now issued and distributed broadcast.

The boards of health of the small cities of Massachusetts, in some respects, are already leading, but it is possible for them to make still greater advances. If we are agreed that we need better housing laws, better methods for combating tuberculosis and infant mortality; if we are agreed that uniform methods of recording our work and its results are to be desired; then we can work together to overcome the difficulties that beset our path. The task is a big one, but let us remember that it takes concerted and co-operative effort to move heavy obstacles. In this state, there is no better or more direct way of accomplishing these ends than through the efforts of this Association.

DISCUSSION.

On motion by Mr. Kruesi it was voted to authorize the Chair to appoint a committee of five to undertake to secure uniformity in board of health reports. The following appointments to this committee were subsequently made:

Dr. C. V. Chapin, Providence Board of Health (Chairman).
Mr. S. M. Gunn, Massachusetts Institute of Technology.
Dr. F. G. Curtis, Newton Board of Health.
Dr. Wm. C. Hanson, Asst. Sec. State Board of Health.
Dr. Wm. H. Davis, Vital Statistician, Boston Board of Health.

PROFESSOR SEDGWICK. There is one suggestion in Mr. Blanchard's paper that is worthy of the careful consideration of the Association and of all persons interested in public health administration, and that is a way of getting over the inability of the small town to meet the necessary expense of modern board of health work. The idea arose, I believe, from a consideration of what is oftentimes done to secure efficient superintendents of schools. Some of you are aware that where two or three poor towns—poor in purse alone—are unable to keep an expensive superintendent of schools, they may combine and secure a superintendent in common. Mr. Blanchard, in his paper, threw out a similar suggestion, and I do not see why the method might not be made to work just as well for board of health matters as for school matters. It was suggested that two or three adjoining towns might combine, and by pooling their interests, be able to afford a really good health officer. This could readily be done, unless each town demanded that its health officer be a resident. Massachusetts has led in many things; it has led in the district medical officers of health; it was certainly one of the leaders in this educational policy that I have spoken of—possibly the first; and it might, it seems to me, lead along this line which Mr. Blanchard has suggested.

PROFESSOR ROSENAU. This subject would not be complete if at least one phase of it were not brought to the attention of this Association, and that is the leadership in public health training which the Massachusetts Institute of Technology has had through the leadership of Professor Sedgwick, head of the department of biology in that splendid institute. I would emphasize the influence which Professor Sedgwick and that department and that great school has had, in the development of public health conditions in this country, and, particularly, the influence which Professor Sedgwick and his pupils have had in the education—and I

might say the formation—of health officers, who have gone to a number of smaller cities where they have done splendid work. I think Professor Sedgwick and the Institute should be congratulated upon the splendid record they have made.

MR. RITCHIE. In the paper that Mr. Gunn presented there was a corroboration of a bit of statistical work on infant mortality undertaken by me while with the Boston Board of Health. It is perfectly easy to secure statistics on infantile mortality—infants dying below the age of one year—in any of the well-organized European towns. In the United States it is possible to get a rate per thousand births of the infant mortality in less than ten of the cities. The suggestion, therefore, that the statistics of infantile mortality be looked over with the greatest of care is a vital one. Sanitarians look to an improvement in the vital statistics, to a lowering in the death rate, by saving babies more perhaps than through any other one department of their work. The babies cannot be saved until we find how many are being lost, and why. Therefore, gentlemen, may I impress upon you the need of some way of determining the infantile mortality per thousand births in this country?

DR. KELLY. My practice extends outside of the city of Fall River into districts which are under the jurisdiction of the boards of health of small towns who are working without pay, and my experience has been that any man who works without pay does not do work of much account. Mr. Gunn made the remark that it is a good thing to publish statistics showing how little boards of health receive as compensation. Even were this done it would probably be said that their compensation was sufficient, and they were being paid all they were worth. Some system should be established whereby communities would be made to realize the value of the men who act as boards of health in towns or cities. The way to impress upon the people in the country the fact that they have boards of health is to pay the boards of health, and pay them what they are worth. They pay the policeman, the school teacher, and the clergyman, but they don't pay the board of health. Qualified men are needed for health work just as much as they are needed for the positions just mentioned, and there should be some provision made to pay for services. When the people have to pay for public health work they will be more particular to see that men are secured who will attend to their duties.

DR. DIONNE. I consider some of the suggestions made by the speakers as practical, even in a small place. I am representing the Ware Board of Health. Though Ware is a little town of only 9,000 inhabitants, this

municipality has been able to pay its health officer as much as $25 a year. Out of an appropriation of $1600 we have a milk inspector whom we pay $200 a year, an inspector of carcasses at $200 a year, and a sanitary inspector, who is our disinfector, and who is also paid $200. We have appointed a physician as inspector of the parochial school out of our appropriation, since that is about the only way we can reach the parochial school through the boards of health, as there apparently can be no money taken from the grand list.

From one of our drug stores, serum for the treatment of meningitis can be secured by the physician without cost. We have recently notified physicians that in all cases of syphilis, 606, so-called, would be furnished by the board of health. In all cases of infantile paralysis our department of health directs that the house be placarded and that the patient be isolated for a period of six weeks; that other members of the family be not quarantined, but other children in the family be kept from school for six weeks after the beginning of the last case in the family; that disinfection be carried out; and that in case of death no public funeral be allowed. Our infantile paralysis cases have been investigated by Dr. Shepard, and I am pleased to say that we have received compliments upon our way of handling them. I simply wish to show you that in small towns these things can be accomplished.

Mr. Blanchard. In order that garbage may be kept and handled in a proper manner, we have had a card prepared which the driver of the garbage wagon gives out, when he finds places where garbage is not properly taken care of. This card is signed by the Board of Health and politely requests the occupant of the house to change conditions. Copies of this card and of our other forms will be furnished on request.

Dr. Palmer. I move that the papers on today's program be printed under the direction of the publication committee, marked in some way approved by them, and sent to all boards of health, so that all may reap the benefit of these papers. (Carried).

Professor Sedgwick. Simply as a matter of information, I may say that it is an interesting and inspiring fact that the medical profession today welcomes the addition of lay members to its work, and invites their co-operation. It is one of the finest signs of the times, it seems to me, and one of the most welcome to the laity. To show that such work as has been described can be done by such men as the readers of these papers, and by others like them, I may say that at the present moment men like these are health officers or sanitary officials of Palo Alto, Cal., and the boards of

health of Montclair, Elizabeth, Orange, Summit, and Hackensack, N. J. Until very lately there was one also in Plainfield. Good work, then, is being done for public health in many directions, by physicians, who have always stood for public health movements, and who by their latest measure—the creation of a course at Harvard Medical School leading to a degree of Doctor of Public Health, are preparing to train men for public health service on the higher levels, not only for small towns and small cities, but for the biggest towns and the biggest cities. It is now possible even for a layman, to obtain at Harvard University, the degree of Doctor of Public Health, while for a medical man it is comparatively easy. This, in my opinion, marks an immense step forward, a step for which Harvard University and especially Professor Rosenau ought to receive, and will receive, I am sure, our warmest thanks.

THE RELATION OF ILLUMINATING GAS TO PUBLIC HEALTH.

By W. T. SEDGWICK and F. SCHNEIDER, JR.,
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In 1792, one William Murdoch, in his little house in Cornwall, for the first time in the history of man, lighted a house with illuminating gas. Shortly after that some of the manufacturing establishments of Manchester, and notably the great engineering establishment of Boulton and Watt (he of the steam engine) were likewise lighted by illuminating gas—a gas made by the destructive distillation of bituminous coal, for distribution through these shops in pipes. Lighting with gas, however, did not grow very rapidly in popular favor. In 1810 it was introduced into some parts of London, in 1820 into some parts of Paris, in 1821 into Baltimore, in 1822 into Boston, and in 1823 into New York; and yet so slowly did this new practice develop that Dr. John Collins Warren, in speaking the other evening about the introduction of illuminating gas into Boston, said that his father, when he went to occupy a new house on Park street, occupied the first house in Boston to be lighted by illuminating gas—and that was in 1845. So that this introduction of gas in 1822 must have been into the streets, public buildings and the like. By 1855, however, virtually all of the cities of Massachusetts had illuminating gas distributed. During the Civil War the distinguished and beloved founder of the Institute of Technology, Professor William Barton Rogers, afterward President Rogers, was appointed by the war governor, John A. Andrew, as the first state inspector of gas meters and gas in the United States, and the first, of course, in Massachusetts.

In those days there was no idea that there was any connection between illuminating gas and public health. President Eliot's father published an important paper in 1855 on illuminating gas, and said nothing, or next to nothing, about its relation to public health, and, as I have intimated, no gas inspector was deemed necessary until during the period of the Civil War, and then not mainly on sanitary grounds. The use of gas, however, grew apace, and it was produced by the same process of manufacture until about 1870, when a new process was invented by a Frenchman, perfected by an American and patented by the latter, I think, in 1874. It was a process of making illuminating gas not by the destructive distillation of bituminous coal, but by passing steam over incandescent coal or carbon of some

sort, under which conditions the steam or water was decomposed, so that hydrogen and carbon monoxide and some carbonic acid and traces of other gases came off at the top of the retort, the gas being non-luminous, but called, because it was made from steam in this way, water gas. It became necessary, of course, to enrich it for illuminating purposes, and it is still so made and so enriched by oils or naphthas, and is the gas which we are today using in whole or in part in most of our cities.

By 1880 it had become a rather common practice to make water gas, and a corporation desiring to compete with the old Boston Gas Company and the other gas companies of this state held the water gas club over the owners of the old gas companies and their stock, telling them to surrender at a low price or they would manufacture water gas and put them out of business. The owners of the old gas companies, however, were unwilling to hold up their hands and surrender without a fight. They accordingly employed the sanitary club which has been so often used, rightly or wrongly, in public and political affairs, and secured the passage of a law providing that no illuminating gas containing more than 10 per cent. of carbon monoxide should be manufactured and distributed in this state. It was believed that the new gas was very poisonous, and it was comparatively easy for the old gas companies, with all their influence, to get the law passed, and the plans of the invading corporation were temporarily checked.

A battle royal was then fought by the owners of the water gas patents, who hated to see their favorite gas put under a ban or prejudiced in any way in popular favor, either in this state or elsewhere, and who were fearful that a prohibitive law might be put in force in other states, as well as in Massachusetts; although, as a matter of fact, there was little danger of that. In 1884 one of the largest arrays of legal talent ever gathered was seen in the state house, with Mr. Richard Olney at the head of the old gas companies and Mr. Robert M. Morse at the head of the water gas interests. The State Board of Health, Lunacy, and Charity, as it was then called, was drawn into the controversy, and in 1883 requested my distinguished and lamented colleague, Prof. William Ripley Nichols, to take up an investigation of the sanitary qualities of the new gas and compare them with those of the old. I had just come to Boston at that time from the Johns Hopkins University, and Professor Nichols invited me to join him in this work.

We set to work very carefully, Professor Nichols doing the chemical work and I doing the physiological experimentation upon animals. We made an elaborate series of investigations, partly in a barn which I had modified for the purpose, in Newton Centre, where I then lived, partly in Athol, which was illegally using the new gas, and partly in Middletown,

Connecticut, where Professor William O. Atwater, the distinguished food expert, an old friend of mine, kindly gave me the opportunity to experiment. In 1884 the results of our experiments were published, and they bore heavily against the new gas. The results, briefly, were these: If in a room of 800 cubic feet—a small hotel bedroom—the gas should be let on during the night from one or more burners, the chances were good that if the gas were the old-fashioned gas—the coal gas, so-called, whoever was in that room would be taken out in the morning with a bad headache and feeling very dull and stupid, but still alive; whereas, if the gas were water gas, he would almost surely be taken out dead. This report was based on the results of our experiments upon animals, and we made enough experiments to be sure of our ground. We further predicted that if the law should be repealed, and water gas introduced into this state, the deaths from gas poisoning would increase enormously.

The sanitary club which our report constituted enabled the old gas companies to hold off the water gas company until they received their price. Then the sanitary club was laid on the shelf and forgotten, and all hands, old and new, united in the repeal of the old law because it interfered with business. In 1890 the law was repealed, with what results we propose to show you this afternoon.

One of the by-products of this agitation, and a good by-product, was the formation of a commission, known as the Gas Commission, afterwards changed to the Gas and Electric Light Commission. One of the good, sanitary things which they were required to do was to keep track of the injuries from gas poisoning and to report them annually. That they have done from that day to this. When the medical examiner system came into vogue we had a body of trained medical men who investigated deaths from gas poisoning, and investigated them intelligently. We have two sets of reports, therefore, upon which we can base our statistical studies—the medical examiners' returns, and the returns of the Gas and Electric Light Commissioners. Mr. Schneider and I have found those of the medical examiners somewhat more dependable and have chiefly used their reports.

It was twenty-three years ago when this commission was appointed, and we began to get our statistics, and twenty-four or twenty-five years ago since I became interested—intensely interested—in the subject. I have spoken to this Association more than once upon this subject, but after the lapse of twenty-five years it seemed to me well to go back and see what Professor Nichols and I said, and how the facts have borne out our predictions. On looking over the results I feel in some respects very well contented. But apart from those considerations, Mr. Schneider and I were surprised, shocked, and astounded, by the extent to which illuminating

gas poisoning is going on in this state and in other states, for it is not merely, or even chiefly, in this state.

In Rhode Island, in New York, in Pennsylvania, and elsewhere, but especially in the northern tier of states, gas poisoning is today a very serious cause of sickness and death; how serious may be judged by the following facts: The rate per 100,000 in gas poisoning in this state and in Rhode Island is now quite comparable with that of scarlet fever in some years, and measles, in others. For example, in 1905, in Massachusetts, the rate for measles was 5.9 and for scarlet fever 3.9, both of which figures are exceeded by some of the figures for gas poisoning. In 1909 the rate for measles in Massachusetts was 4.76 and that for scarlet fever 7.86, figures again either exceeded or approached by the statistics of deaths from gas poisoning. As for infantile paralysis, about which we hear so much, gas poisoning is a far more serious cause of death today than that is, and ought to be taken account of correspondingly. It is not so alarming, because we know more about it. We are always alarmed by the things that we don't understand; we are apt to be too little alarmed by the things with which we have become familiar. Let us compare gas poisoning with a disease like typhoid fever. Typhoid fever in Cincinnati this last year reached the rate of only 5 per 100,000. In Hamburg, Germany, it has been 4 and 5 per 100,000 for some time. In other words, more people are dying of illuminating gas in Rhode Island and Massachusetts than are dying of typhoid in Hamburg, and in many other places.

Our figures begin with 1886, because previous to that time no adequate records were kept. In 1885, Dr. S. W. Abbott, speaking upon the relation of illuminating gas to public health, said that there were more deaths from illuminating gas poisoning in the first year after the law was repealed than there had been in the previous fifty years in the state of Massachusetts.

Mr. Schneider has very carefully worked out from the reports of the Gas Commissioners, the total amounts of gas made in the state. It must be remembered that there are many people in the state who get no gas. There are some companies which chiefly make water gas, and some which chiefly make coal gas, but most of them today mix the two, the water gas being quicker to make and in many ways a great help to the gas manufacturer. The actual cost of coal gas and water gas today is said to be just about the same; sometimes one is a little more expensive, sometimes the other.

The deaths from gas increased very quickly after the repeal of the law in 1890, reached a high maximum in 1898, fell off very suddenly to 1901, and ran up again to its very high position in 1908. In 1901 the New England

Gas & Coke Company, a coal gas corporation, was established in Everett, and began introducing vast quantities of coal gas into the total output, so that the water gas made in that year fell off.

During the year 1901, while the number of suicides from all methods rose, deaths from gas poisoning were very low.

Another very interesting point is the seasonal distribution of gas poisoning. Of course, less gas is used in summer than in winter. The days are long, the nights are short, the windows are wide open. Suicide is less frequent in the summer. The high points of suicide, as we should see if we had the seasonal curve, are in April and October, and in summer the whole number of deaths is small.

This total number of deaths by gas poisoning is divided into accidental and suicidal, as indicated by the medical examiners. Accidental and suicidal deaths run about half and half, according to their returns. It is often a fine point to determine whether a case is accidental or suicidal.

This matter of suicide by gas is very important, and not to be passed over lightly. We make it difficult for people to get morphine and certain other poisons, but we make it very easy for them to get illuminating gas, and then fill the newspapers with accounts of gas poisoning, suicidal and otherwise, which influence the mentally unbalanced. Thus it is a fact that gas has become a very popular suicidal agent—how popular, you will see when you realize that about one-half of the high death rate from gas poisoning is suicidal. Accidents reach their highest point in December, because the days are short, the nights long, the windows closed—the gas is used early and perhaps blown out or left to go out early. All things thus conspire to make the cases of accidental gas poisoning numerous at that time; but gas is not so much used for suicide then as later.

It is possible to have deaths from gas poisoning with no gas pipes in the house. A house in winter, as you know, acts as a chimney, the heated air rising and sucking in the ground air. Those cases are common and well known to students of this subject.

From newspaper clippings, we can cite various ways by which gas poisoning has occurred. Sometimes an animal like a rat or a cat, running by a cock on a gas stove, will open it, as is stated in one of these cases. Sometimes people will blow out the gas. But the quarter-in-the-slot meter is today responsible for a large number of deaths. In a recent case, robbers broke a slot meter to get the money, whereupon gas was let into a house, and a large number of people had their lives jeopardized, and some were killed.

It is fair to say that in the fifty years preceding the repeal of the law regulating the amount of carbon monoxide in gas, there were not half a

dozen cases of gas poisoning outside the two or three where the gas was being used in Massachusetts in violation of the law. Since that time it is safe to say that there have been at least 1200. Is not that a pretty high price to pay for the convenience of manufacturers?

The remedy is the return to the use of the old-fashioned coal gas, which is still used in many places, and which by the testimony of gas men is not much, if any, dearer than the water gas, but which is much less convenient to make. It is argued by the gas men that the water gas has a higher candle power. So it has, nominally, according to the common methods of measurement, but all I can say on that head is this: I would like to go back to the old coal gas simply and purely on candle power. The old light was a better light than the light today. Although the light today may read 24 candles and the old one read only 16, I know that the old gas was a better gas for domestic use, and I would rather pay $1.50 a thousand, which I used to pay for the old coal gas, simply from the lighting point of view, and without any connection whatever with sanitary ideas, than to pay what I do now for the so-called 24-candle water gas.

Massachusetts is entitled to credit for having required a record of cases of gas poisoning. She is not entitled to great credit for having repealed the ten per cent. law. Gas has become in Massachusetts, and especially in Rhode Island, a very important cause of death, and it is our business as sanitarians to take cognizance of that fact and as opportunity offers to act upon it.

The complete papers of the authors with diagrams and statistics will be published—probably in the *Journal of Infectious Diseases*—in the near future.

Notes and Reviews*

PUBLIC HEALTH NEWS AND NOTES.

By B. L. ARMS, M. D., Boston.
(*Reviewer.*)

Formation of Health Officers' Association in New Jersey.—At a meeting of executive officers of boards of health of New Jersey held at Newark, New Jersey, April 17th, 1911, a permanent organization to be known as "The Health Officers' Association of New Jersey" was formed. A number of the more prominent health officers of the State were present.

The objects of the organization are the advancement of knowledge relating to public health and sanitation and the encouragement of social intercourse among health board officials.

The following officers were elected:

President, C. H. Wells, Health Officer, Montclair; Vice-President, John O'Brien, Jr., Health Officer, Plainfield; Secretary and Treasurer, J. Scott MacNutt, Health Officer, Orange.

An Executive Committee of seven was elected, and the officers, with the advice of this Committee, were instructed to draw up a constitution and by-laws for presentation at the next meeting to be held May 17th.

The membership at present includes as eligible all health officials holding State Board of Health licenses, and doubtless will be extended to other health board officials and employees and to members of local boards of health.

Five or six meetings a year will be held for the presentation and discussion of papers. Most of the prominent health board officials of the State have expressed themselves as strongly in favor of the Association, which promises to grow rapidly in membership and influence.

"No Report" on Births and Deaths. From the March Bulletin of the Texas State Board of Health under the preceding heading is the following:

"With no desire to embarrass unduly or to give needless offense, but to indicate some of the difficulties encountered in the effort to secure trustworthy reports of births and deaths in Texas, the following list is presented,

*EDITOR'S NOTE. Readers are urged to send public health notes of interest to the Editor by whom they will be distributed to the proper reviewer. The sender's name or initials should appear under such notes.

showing the names of those from whom no reports of births and deaths had been received when the copy for the March Bulletin was closed on March 22. The list is almost staggering. These individuals failed to make reports, although the law says that all reports for any given months shall be mailed to the State Registrar of Vital Statistics on or before the 10th of the succeeding month, and despite the fact that cards were sent to the delinquents on March 15, indicating that reports were then overdue.

"It is altogether possible that some of those whose names are given will make reports within the next few days. In the case of a few others explanatory statements have been received which partially exculpate the writers from blame in the matter, in any event, there is absolutely no desire to humiliate or to do an injustice to any one. The fact remains, however, that this is a formidable list of delinquents, one which should not be found in a department of a state like Texas.

"The State Registrar desires to be of service to the local registrars and county clerks, upon whom is incumbent the duty of making reports to the State Board of Health. The Sanitary Code for Texas has now been enacted into rock-ribbed law, devoid of constitutional defect, and carrying adequate provision for the punishment of those who violate the law. A spirit of co-operation will at once make the reports of the State Registrar 40 per cent. more accurate and complete, and will make it possible for Texas soon to achieve recognition by the Federal Statistician as the only one of the Southern States whose Department of Vital Statistics merits approval of the national government." Then followed a list of 148 health officers, county clerks, and registrars. It is fair to assume that in the future reports will be forthcoming.

The same bulletin contains this note:

"A Good Move—Recently Dr. W. M. Brumby, formerly State Health Officer, now medical director of the Equitable Life Insurance Company, San Antonio, announced that his company will henceforth require a certified copy of the State Registrar's record as a proof of death before a claim is paid. Should all the life insurance companies operating in Texas adopt this plan, the vital statistics department would be greatly improved and the companies themselves could be protected against fraud."

Personals. Selskar M. Gunn, S. B., instructor in the biological department of the Massachusetts Institute of Technology, at the request of the city authorities, has gone to Milwaukee to make an investigation into the milk situation. The investigation is to be a thorough one extending over many weeks.

Chas. A. Magoon, A. B., a graduate of Bates in 1910, and since then a student in sanitary science at Massachusetts Institute of Technology, has accepted a position in the Boston Bio-Chemical Laboratories, Boston.

Program on Public Health and Sanitation at the Technology Congress. During the Semi-Centennial exercises at the Massachusetts Institute of Technology the following program was given April 11th, 1911, this being one section of a general program.

SECTION E—Public Health and Sanitation.

Chairman, Professor W. T. Sedgwick.

"Profitable and Fruitless Lines of Endeavor in Public Health Work", Edwin O, Jordan, '88, Professor of Bacteriology, University of Chicago, Chicago, Ill.

"The Technical School Man in Public Health Work," Harry W. Clark, '88, Chief Chemist, State Board of Health, Boston.

"Present Status of Water Purification in the United States and the Part that the Massachusetts Institute of Technology has Played," George C. Whipple, '89, Consulting Engineer, New York City.

"The Pollution of Streams by Manufacturing Wastes," Williams S. Johnson, '89, Sanitary and Hydraulic Engineer, Boston.

"Sewage Disposal with Respect to Offensive Odors," George W. Fuller, '90, Con. Hyd. Engineer and San. Expert, New York.

"The Food Inspection Chemist and His Work," Herman C. Lythgoe, '96, Analyst, State Board of Health, Boston.

"The Life Saving Corps of the Technical School," Severance Burrage, '92, Prof. Sanitary Science, Purdue University, Lafayette, Ind.

"Factory Sanitation and Efficiency," C. E. A. Winslow, '98, Assoc. Prof. of Biology, College of the City of New York, New York City.

"A Review of the Work of the Sanitary Research Laboratory and Sewage Experiment Station of the Massachusetts Institute of Technology," Earle B. Phelps, '99, Consulting Sanitary Expert, New York City.

"Bacteria and Decomposition," Simeon C. Keith, Jr., '93, Asst. Professor of Biology, Mass. Inst. Tech., Boston.

BOOK REVIEWS.

Hygiene and Public Health. By Louis C. Parks, M. D., D. P. H. Univ. of Lond. Consulting Sanitary Adviser to H. M. Office of Works, etc., and Henry R. Kenwood, M. B., F. R. S. Edin., D. P. S. Lond. Chadwick Prof. of Hygiene in the Univ. of London, etc. Published by P. Blakiston's Son & Co., Philadelphia. Price, $3.50 net.

This book of nearly 700 pages, which is, as the preface shows, "the 4th edition, under the conjoint authorship, of a work which had previously run through five editions," has been carefully revised, and new matter has been introduced where necessary, to bring the work up to date since the last edition in 1907.

The book contains 86 illustrations and is a practical, comprehensive work. The subject is taken up in thirteen chapters—water, garbage, air and ventilation, warming and lighting, soils and building sites, climate and meteorology, exercise and clothing, foods, beverages and condiments, the contagia, school hygiene, disinfection, statistics, and sanitary law and administration. Each is discussed fully from the standpoint of conditions in England. The chapter on communicable diseases—130 pages—deals with them, first, from their common aspects, and then the different infections are taken up specifically, the chapter concluding with a discussion of hospitals.

A few peculiarities are noted. In the light of our present knowledge of diphtheria it seems strange to find the following statement in a book on hygiene: "The etiology of this disease is still to a certain extent veiled in obscurity." At the end of this paragraph, however, the authors state that "chronic carriers" may account for much of the obscurity of origin. They also state that "It is never safe to allow recovered patients to mix with healthy people until at least fourteen days have elapsed since the disappearance of all membrane," which would extend quarantine in every case longer than the average duration of all cases in some cities where releases are made on a bacteriological basis.

Two pages are given to syphilis, but no mention is made of gonorrhea (urethritis) although about a third of a page is devoted to ophthalmia neonatorum, which subject is dismissed with this sentence: "In all forms of purulent ophthalmia a pyogenic organism—the staphylococcus pyogenes aureus or albus—is usually the active cause of the disease."

No mention of Negri bodies is made in speaking of the diagnosis of rabies, although the authors say that "The post mortem changes in canine rabies are neither constant nor specific; but the following diagnostic appearances may be mentioned—emaciation, dark blood, hyperemia of mucous membranes and of many of the internal organs, the frequent presence of foreign bodies in the pharynx, etc."

On the whole the book is very readable and is a distinct addition to our works on hygiene.

B. L. ARMS.